MARCH, 1908

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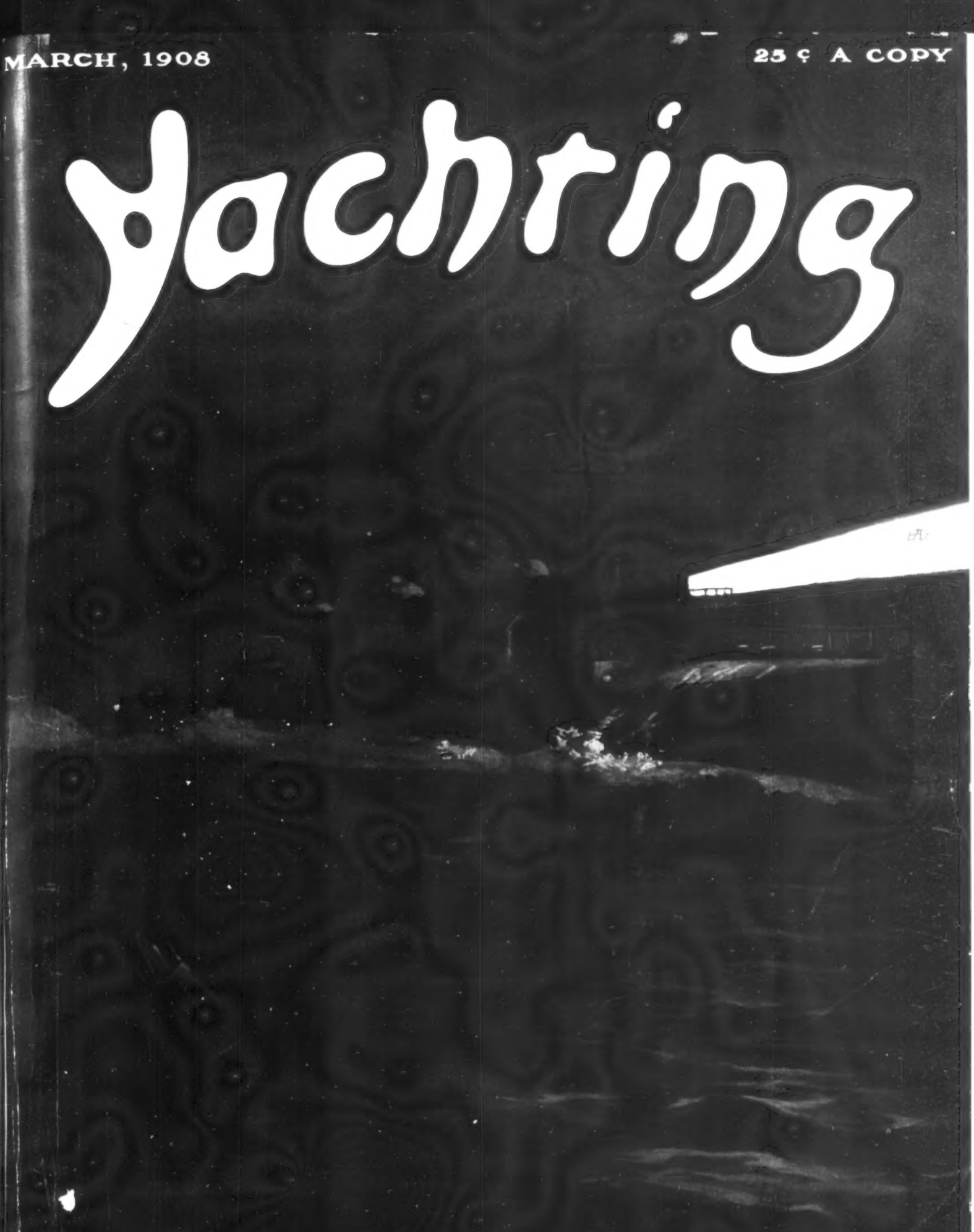
Yachting



YACHTING PUBLISHING CO. NEW YORK.

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MOTOR BOATS

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MORRIS HEIGHTS, NEW YORK CITY

YACHTS FOR SALE AND CHARTER

A DEPARTMENT for the sale and charter of craft of every kind, in the interests of YACHTING'S *subscribers. A special low rate is made for advertisements in this classification, which includes the making of a half-tone reproduction, free of charge, from photograph furnished by the advertiser. For rates address*

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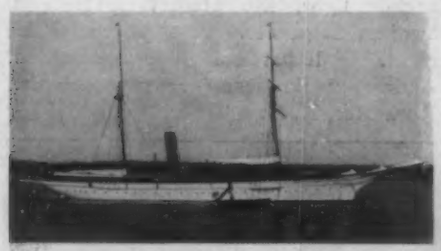


The above sea-going Steam Yacht offered for sale at an attractive price.

I also have all the better Steam, Gasoline, Auxiliary and Sail Yachts that are available for purchase or charter. Prices, particulars, etc., upon request.

FRANK BOWNE JONES,
Yacht Agent, 29 Broadway, New York.

No. 540 FOR SALE—Centerboard Pole Mast Sloop, 48 x 35 x 13 x 2.6; built 1900 by Thos. Muncey. Bay Shore, New York; double planking, copper fastenings; two tons lead on keel; complete suit Wilson sails in fine shape; cabin giving 6 feet headroom, is partly open for summer use; a good cruiser, with speed enough to win, in first class condition throughout. Price $1,050.

Address STANLEY M. SEAMAN,
220 Broadway, New York.

No. 10,393. FOR SALE.—Keel Cruising Sloop 40 x 27 x 12 x 5, built by Hanley, 1903. A-1 construction. Lead keel. Cabin provides sleeping berths for four people, gives 6 ft. 4 in. headroom, finished in panelled mahogany. Toilet room, galley, foc'sle with berth for man, w. c., etc. Complete cruising outfit. Yacht in first class condition throughout. Will be sold cheap. Inspectable New York. Address, Stanley M. Seaman, 220 Broadway, New York.

STEAM LAUNCH DOROTHY.—26 x 6½. Torpedo Stern. Stickney Safety Steam Generator. Fired by wood or coal. Noiseless, odorless and absolutely safe and reliable. New 1906. $500 at Sebago Lake, Maine.
HENRY R. STICKNEY, Portland, Maine.

BRONZE SLOOP NEOLA For Sale or Charter for the season of 1908. This yacht has been remodeled and rebuilt under the supervision of Mr. William Gardner and is in most complete condition for both racing and cruising. One of the most expert racing skippers has been engaged for the season and will go with the boat if chartered. Apply to any yacht broker for particulars.

FOR SALE.—Knockabout 33 ft. O. A., 21 ft. W. L., 4 ft. draught, in first class order. Mahogany cockpit and trim, two suits sails, one fine round bottom tender, three anchors, one 200 lb. mushroom mooring with 65 feet chain, hair cushions nicely covered, standing rigging new—in fact, no money has been spared to keep this boat in the best of shape, having always had a man to take care of her. Can be put in commission at a very small cost. For particulars address C. W. RAWSON, New Haven, Conn.

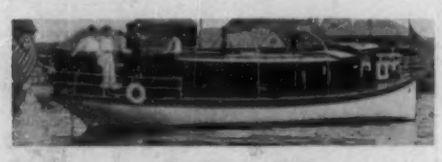
FOR SALE.—Gasolene Cruising Launch 50 ft. x 10 ft. x 3 ft. 6 in. In first class order. 35 H. P. 20th Century Engine. New last Spring. Hull built by same people. St. Domingo mahogany cabin, polished. The handsomest boat afloat.
Address W. S. BRANDAGEE,
625 State Street, Bridgeport, Conn.

FOR SALE—No. 5380. Hunting Cruising Launch, built 1905; first class construction—all copper fastenings, 36.3 O. A., 10.8 beam, 2.4 draught. Cabin sleeps four people comfortably, gives 6 feet headroom, neatly finished in panelled mahogany, well-lighted and ventilated. 18 H.P., 4 cycle, Palmer motor, installed 1905, in cockpit, covered by hatch (thereby eliminating all odors from owner's quarters). Gives speed of 8½ miles an hour. During entire season 1907, when some heavy seas were encountered, motor never "laid down." Extra large gasolene capacity in heavy copper tanks. Galley full width of boat. Nice toilet. Completely equipped for cruising, including 10 foot mahogany trimmed tender, brass binnacle and compass, interior fittings and furnishings, etc. Her high freeboard and good beam afford excellent seagoing qualities. Will be sold cheap if taken before putting in commission. Inspectable this city. Address
STANLEY M. SEAMAN,
220 Broadway, New York.

No. 2555. Well known Raceabout, 36 feet on deck, 21 feet water line, 7 feet 8 inches beam, 3 feet 5 inches draft; designed by Crane and built by Wood 1904; double planked mahogany construction; all lead ballast outside. Has hood cabin. A particularly fast boat at a reasonable price.

FRANK BOWNE JONES, Yacht Agent,
29 BROADWAY, NEW YORK.

No. 3730.
FOR SALE, c. b. Knockabout 38 x 20.4 x 9 x 2 6, Mower design, built 1901. A-1 construction — copper fastenings. Inside lead ballast. Two transoms in cabin. Large cockpit, affording excellent day sailing facilities. Steers with tiller. In first class condition. A very fast sailer. Price $550. Apply to STANLEY M. SEAMAN, 220 Broadway, N. Y.



No. 5391. FOR SALE—Cruising Launch, 43.9 x 9.6 x 3, built 1905. Copper fastenings. Sleeping berths for 4 people, besides 2 in engine room for crew. Toilet room, galley, raised pilot house. Interior finish, mahogany throughout, gives 6 ft. 4 in. headroom. 18-horse Standard motor; speed 12 miles. Complete cruising outfit. Yacht in first class condition throughout. Price reasonable. Apply to STANLEY M. SEAMAN, 220 Broadway, New York.

FOR SALE—Center-board Yawl "Cachalot," 37¼ x 26 x 12; draught 3 feet 6 inches; head room 5 feet 10 inches; built by Crosby, Osterville; outside lead ballast 5,000 lbs.; bright decks; trunk cabin containing four berths, with springs and hair mattresses, transoms in front, with cushions; toilet room with closet and wash-bowl piped to water tank; galley with stove and running water; forecastle with berth for man; bright mahogany-trimmed dinghy on davits; sails and upholstery nearly new; spinnaker, balloon jib and awning; complete cruising outfit. Engine can be easily installed; bed under cockpit; deadwood cut for screw. Handsome modern boat. Price reasonable. Address F. W. D., P. O. Box 718, New York; or ask your broker.

FOR SALE—$6,000 Gasolene Yacht for $3,000; length 45 feet, beam 11 feet, draft 2½ feet; very strong heavy sea boat. She can cross the ocean; has two sets of engines in case of breakdown; copper sheathed; all new. Write for particulars.

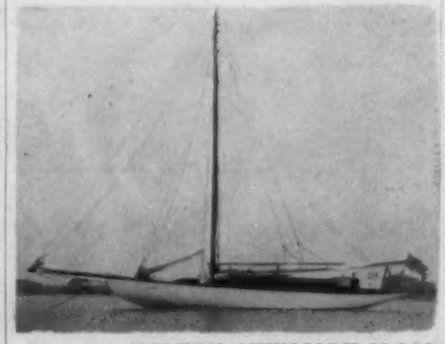
H. H. CASWELL,
Asbury Park, N. J.

C. B. knockabout, 24 ft. over all, 15 ft. w. l., 7 ft. beam, 2 ft. 6 inches draft, 400 lb. iron keel, mahogany cockpit, designed by Lawley and built in Maine. Very able boat.

For full particulars apply to TYLER CLARK, 202 YORK ST., NEW HAVEN, CONN.

For Sale at a Bargain, or will Exchange—Auxiliary keel schooner 42 x 34 x 13 x 5. 8 h. p. Lozier motor in lazarette. New sails, tender, very complete inventory. Not a new boat, but sound as when built. Has cruised from Maine to Florida by outside route. Only reason for selling, no time to use her.

J. H. BURTENSHAW
323 West 83rd Street, New York



No. 2684. MODERN AUXILIARY SLOOP, 50 feet on deck, 31 feet water line, 13 feet beam and 7 1-2 feet draft: built 1903; new sails last season; cabin finished in mahogany and white enamel, 6 feet 2 inches headroom; stateroom and two berths and two transoms in saloon; 20 H.P. motor. FRANK BOWNE JONES, Yacht Agent, 29 Broadway, New York.

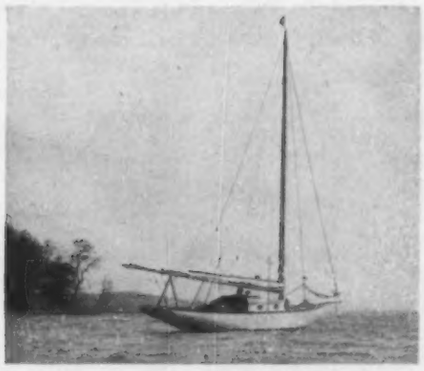
GASOLINE CRUISING LAUNCH, 39 ft. 6 in. over all, 9 ft. 6 in. beam, draught 2 ft. 4 in.; built in August, 1907; speed 9½ miles; oak frames, cypress planking, copper rivetted, salt water fitted throughout; 6 ft. 2 in. head room; 3 cylinder 22 H.P. engine; 140 gallon gasoline tank; berths for six; large refrigerator; toilet room and lavatory; electric lights; complete equipment of sailing lights, anchor light, life preservers, anchors, awning, flags, etc. Cost $4,500. Price right. Full particulars on application. Address "Hiawatha," 250 Rosedale St., Rochester, N. Y.

This smart little boat, 25 foot over all, 6 foot 6 beam and 3 foot draft. Speed 8½ miles an hour. A good reliable engine, 2 cycle, 6 x 6 Lathrop, 20 gallon copper tank, brass piping, anchors, etc. Can be seen at Wethersfield, Conn. Price $450.

ED. S. McALL
410 East Willow St. Syracuse, N. Y.

No. 10362. FOR SALE—Keel Sloop, 45 x 31 x 12 x 7 4; built 1893; copper fastenings; 6 tons lead and iron on keel; 3 tons lead and iron inside; cabin provides sleeping berths for 4 people, giving 6 ft. 8 in. headroom, finished in white enamel and mahogany, toilet room, galley and foc'sle; new sails 1906; 10-foot tender, binnacle and compass, interior fittings, new water tanks 1907, etc.

Offered very reasonable. Apply to
STANLEY M. SEAMAN,
202 Broadway, New York.



KEEL SLOOP, ONTARIO.—Designed by Wm. Gardner and built by A. W. Springstead, at Canandaigua, N. Y., Fall of 1905. Dimensions, o. a., 41 ft. 5 in.; w. l., 28 ft.; beam, 9 ft. 7 in.; draft, 5 ft. 2 in. Boat has white oak frame and cypress planking, fastened with galvanized nails. Cabin has 6 ft. 2 in. headroom, is furnished bright, in butternut and walnut, and has four berths, shipmate stove and complete cruising outfit. McClellan sails, 982 sq. ft. Mainsail and three jibs. Durkee's best bronze blocks and turnbuckles, plow steel standing and Manila running rigging. Bridge deck with room to set engine, if you must have it. Price reasonable.

LOUIS SAYER, Canandaigua, N. Y.

A Floating Home at a Wonderful Bargain

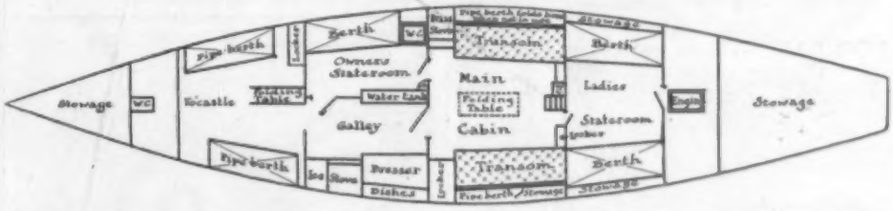
Shoal Draught Auxiliary Sloop Irene now laid up at Marco, Florida. Built and equipped for cruising on the shallow waters of the gulf, she is just the sort of craft for hunting and fishing trips or a floating family home.

Tonnage, 15 gross; 10 net; length, 45 feet; beam, 15 feet; cabin, 27 x 11 x 6; screened throughout; photo dark room; closet; water tank, 200 gallons; gasolene tank, 50 gallons; kerosene tank, 30 gallons; 5 bunks, extra cots, mattresses, bedding, etc.; refrigerator, galley with utensils, table ware, etc.; tools, instruments and charts; new suit of sails, by Carpenter, not yet bent on; Regal 8 H.P., 4 cycle engine; life boat launch, skiff, Canadian canoe; price, $1,300; deliverable in cruising condition anywhere on the west coast of the peninsula of Florida.

Address, IRENE, Care of Yachting,
20 Vesey St., New York, N. Y.

No. 10,215. FOR SALE—Auxiliary Keel Cruising Yawl (see illustration and interior plan); 64 feet o. a., 46 feet w. l., 14 feet 6 inch beam, 10 feet draught. Built by Lawley in their thorough manner; steel frames throughout; very heavy planking; white pine decks. Yacht has always been well cared for and is now in first class condition. Fully equipped, including two tenders in davits, screw steering gear, windlass, binnacle and compas, anchors and cables; very handsome interior fittings and furnishings; copper fresh water tanks, etc.; 10 h. p. Fay & Bowen engine, double cylinder type, gives speed of 4 knots an hour. Will sell at a sacrifice. Seen Detroit, Mich. Apply to

STANLEY M. SEAMAN, 220 Broadway, New York.



FOR SALE, THE BEST BARGAIN ON THE YACHTING MARKET.—Steam Yacht, 125 ft. over all, 20 ft. beam and 6 ft. draft. Boat deck runs length of vessel, affording excellent shade and protection on main deck. Accommodations would be considered extremely roomy on a boat much larger. On the main deck from forward they are: Lamp locker, bo'swain's storeroom, officers' mess and toilet room, owner's den, captain's cabin, machinery space, storage battery room, galley, pantry, saloon, music room, entryway and owner's stateroom, and on the berth deck, paint locker, forecastle, two officers' staterooms, cold storage room, engine and boiler rooms, followed by five single and one double stateroom, linen locker, two toilet and one bath room. Power equipment in excellent condition. Scotch boiler, compound engine, evaporator, ice machine, electric lighting plant, steam windlass and capstan and steam heat. Three boats and launch (reliable four-cycle gasoline engine) are carried. Navigating instruments, deck and cabin inventories unusually complete. Yacht has thoroughly proven her seagoing qualities, is economical to operate, handles well and is unusually comfortable and easy in deep sea work. For terms and full particulars, apply to any of the leading Yacht Brokers.

CRUISING GASOLENE YACHT, 47 ft. o. a., 9 ft. beam, 3 ft. draught, 19 brake H.P., Fay & Bowen, 3-cylinder engine, sleeps seven, galley, toilet, full equipment, oak finish.

ROBERT HENKEL,
Foot of Randolph St., Detroit, Mich.

ORESTES

WINNER of Leg of Lipton Cup, Winner of Inter-City Match, and Champion 22-Rater for 1906.

Third in percentage for 1907.

Designed and outfit by Burgess & Packard in 1906, *Orestes* has proved herself to be a very fast and able boat, easily handled, and an especially good sea boat.

Has complete outfit of racing sails; hollow spars; bright deck; mahogany fittings; all outside lead ballast. Condition A1. Price $1600. Can be seen at Burgess & Packard's Yard, Marblehead, Mass.

SALLY VIII. **Winner of Quincy Cup, 1907.** Unquestionably the fastest heavy-weather sonder boat ever built. Record for 1907 was 11 starts, 6 firsts, 2 seconds. An ideal boat for afternoon sailing and easily handled by one man.

Inventory includes three complete suits of sails, made of special racing duck: four spinnakers; three balloon jibs; working jib; storm jib and gaff headed trysail. Bright cedar deck, outside lead ballast, usual fittings. Built in 1906. Very good condition. Price $900. Can be seen at Burgess & Packard's Yard, Marblehead, Mass.

BURGESS & PACKARD

H. A. Hawthorne, Agent, 131 State Street, Boston.

The NEPTUNE MARINE CONSTRUCTION COMPANY, 150 Nassau Street, New York City, Offers the Following List of Boats For Sale:

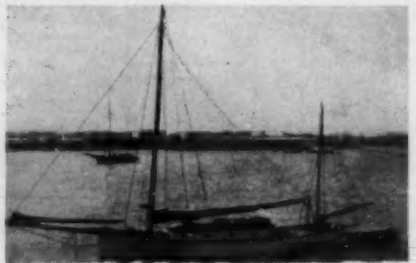
FOR SALE.—Three passenger or freight steamers, 97 feet over all, 17 feet 6 inches beam. Built of white oak 2-inch planking. Draught 5 feet, speed 14 miles per hour. Engines compound 12-22-12. Independent air pump. Boilers allowed 125 lbs. PRICE OF EACH, $8,500.00.

HUNTING CABIN LAUNCH ROVER. Length 25 ft., beam 7 ft., draught 30 inches. Broad V shaped mahogany stern. New 10 H. P. 2 cyl. Palmer Splitdorf coil. Mahogany sky-light and square removable windows and removable kahki canopy and side curtains enclosing cockpit. Cabin finished in oak, mahogany and white enamel. Specially made large ice chest. Price $750.00.

CABIN CAT WINDWARD. L. O. A. 29 ft.; L. W. L. 27 ft.; Beam 10½ ft.; Draught 2 ft.; Sail Area 730 sq. ft.; Cabin, Spars in good condition. Full Inventory. Price $475.00.

THE NEW POWER BOAT "DACOTA" For Sale. Built last Spring for the Commodore of the Rochester Yacht Club. Dimensions are: 70 ft. o. a., 52 ft. w. l., 13 ft. beam, 4 ft. 3 in. draught.

LAUNCH, ELECTA.—Length of boat, 30 feet; beam, 7½ feet; solid mahogany glass cabin, arranged for sleeping apartment, cushions, etc.; 6 horsepower Miamus motor; speed of about 8 miles an hour. Fine boat for the money.



45 x 13 x 3 10-H. P. Motor. Elegant Cabin. This boat, built by the owner for cruising and comfort, can be handled by one man. Sleeps 6 in cabin.

YAWL SAYONARA. L. O. A. 60 ft.; L. W. L. 46 ft.; Beam 12 ft.; Draught 9 ft. 2 in.; Lead Ballast. Roomy Cabin, Full Suit of Sails and Full Inventory. Price $4,000.00.

BLACK BEAUTY.—Winner of the 1907 Championship Pennant at Winneconne, July 4, defeating two crack racers, the North Butte and Fantana, over a 12 knot course. Speed, 19½ miles per hour. 35 ft. o. a.; 30 horsepower engine; double cockpit with auto seats.

AUXILIARY YACHT MASCOTTE, 63 ft. x 51 ft. 8 in. x 4 ft. 4 in. Ballast, iron. Trunk cabin. Five berths and owner's stateroom. Galley, toilet and four berths forward. 6 ft. 2 in. headroom. Twenty-five horsepower Bauers Bros. engine, 2-cylinder, 4-cycle. Full inventory.

"ALICE," MOTOR BOAT.—L. O. A., 33 ft.; Beam, 7 ft. 6 in.; Draught, 3 ft.; Cabin, Glass—let down windows; raised pilot house; air whistle; brass steering wheel; galley with ice-box. 2 Primer cooking stoves; toilet; running water; cushions. Price $350. May be seen by appointment.

FOR SALE—AUXILIARY YAWL "WAPITI;" designed by W. H. Hand, Jr.; 40 ft. x 28 ft. x 11 ft. 4 in. x 3 ft. 4 in.; 6500 lb. lead keel; hull put together with bronze bolts and screws; no iron used in construction; launched July, 1905; strictly up-to-date; bronze blocks, binnacle fittings and windlass; Edison steering gear; silk spinnacker and balloon jib; galley, with sink and refrigerator; Sands' w. c.; large mahogany cabin, 4 berths; berth for man forward; 10 h. p. 4-cylinder Buffalo engine, controlled and reversed at wheel; reverse clutch; air whistle; gives speed of 7 to 8 miles. Can be examined Buffalo, N. Y. Has proved an exceptionally fast and able boat. Built for salt water and to go South.

All interior finish made in sections, placed with brass screws to take out to permit of painting interior of hull; center-board removable through cabin, while boat is in water; fully equipped and found; pneumatic mattresses; linen, stove, etc.; up-to-date in all particulars. Fast as a cruiser under sail or power.

MOTOR BOAT. Torpedo model, 25 ft. long by 5½ ft. wide. Keel and frames of oak; deck, mahogany; brass railings and deck hardware. Four-cylinder 10 horsepower Buffalo engine; reverse gear and clutch. Tank holds 25 gallons of gasolene. Boat two years old and in A No. 1 condition.

CRUISING KNOCKABOUT OKEE. L. O. A. 31 ft.; L. W. L. 18 ft.; Beam 4 ft. 6 in. Keel Ballast Lead Cabin. Winner of Block Island Race. PRICE $600.00.

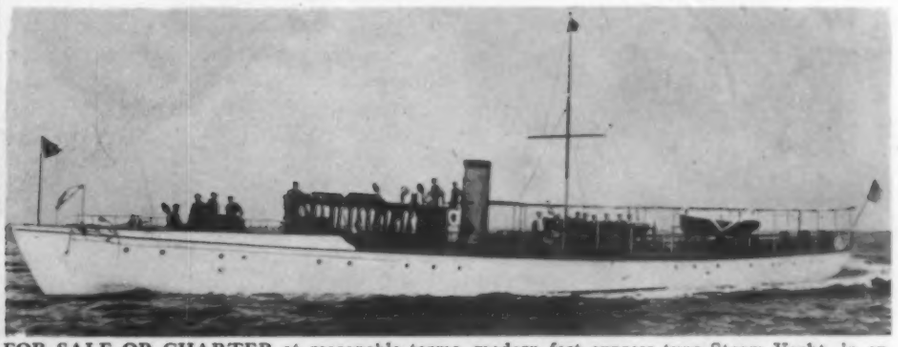
YACHT AVIS—L. O. A., 36 ft. 6 in. L. W. L., 25 ft. Beam, 8 ft. 6 in. Draught, 5 ft. 9 in. 5,000 lbs. Ballast. Patent W. C., and 3½ H. P. Mietz & Weiss Engine.

No. 10,300. FOR SALE.—Centre Board Sea Going Schooner, 97 x 70 x 20 x 9, Wintringham design, built 1903 by Robert Jacob, City Island. A-1 construction throughout. Teak deck trimmings. 32 tons lead on keel. Accommodations provide 3 staterooms for owner and guests, main saloon with two transoms, bath room, 2 toilets, all neatly finished in white and mahogany, giving 6 ft. 2 in. headroom. Galley, captain's stateroom. Foc'sle with 8 berths. New Ratsey sails (since picture was taken) 1906. Three tenders in davits, including launch. One of our finest sea boats of the size and type. Space reserved in galley for gasolene motor. Particulars of Stanley M. Seaman, 220 Broadway, New York.

No. 5101. FOR SALE. Cruising Steam Launch; rebuilt 1906; 60 x 11 x 4.6; copper fastenings; main saloon arranged to seat 16 people, but fitted with transoms for sleeping purposes if desired; toilet, galley and engine compartment; 125 h. p. triple expansion engine, Roberts boiler; speed 12 to 14 miles. Offered at very low price.

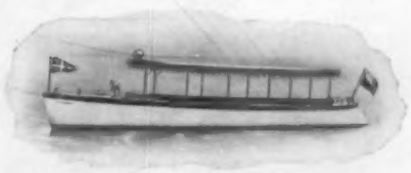
Address STANLEY M. SEAMAN,
220 Broadway, New York.

No. 3775. FOR SALE.—Keel Cruising Yawl. Crowninshield design, built 1901; 62 x 39 x 14 x 8. Seven tons lead on keel. Accommodations provide two quarter staterooms aft each with large spring berth and saloon with two berths and transoms. Interior finish throughout panelled mahogany. Headroom 6 ft. 2 in. Toilet room, galley, 2 berths and transoms in foc'sle, w. c. Handsome and very complete equipment, including 14 foot launch and 12 foot dinghy in davits, new Ratsey sails 1906, also Wilson and Silsby suit in good order. One of the best of the type available; a beautiful boat in every respect. Original cost over $12,000. Price cheap. (Seen N. Y.) Further particulars from STANLEY M. SEAMAN, 220 Broadway, N. Y.



FOR SALE OR CHARTER at reasonable terms, modern fast express type Steam Yacht, in excellent condition. Has two triple expansion engine and Almy boilers, giving a speed of 19 miles an hour with moderate coal consumption. Is double planked, best possible construction. All joiner work selected mahogany, and fittings and furnishings of the best throughout. Has large dining saloon forward, with galley and pantry below. Aft has one double and three single staterooms and bath. Steam heat and electric light. All rooms well ventilated and lighted. Excellent boat for ferry service. For further particulars apply to COX & STEVENS, 15 William St., New York City.

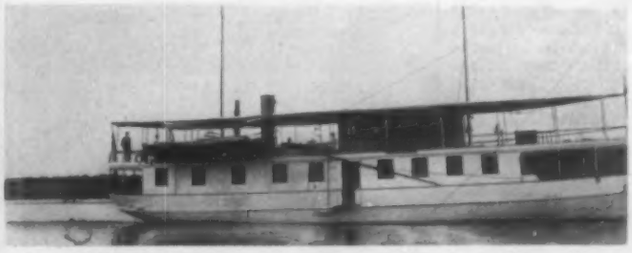
No. 1892. FOR SALE. Cruising Launch, 47.6 x 9.6 x 3.6. New bow and stern, 1906, by N. Y. Y. L. & E. Co. Copper fastened throughout. Main saloon and pilot house sleep four people, give 6 ft. 3 in. headroom, panelled in cherry rubbed to dull finish. 30 h. p. 20th Century motor installed 1905, gives speed of 12 miles. Completely fitted for cruising. Everything in A-1 order throughout. One of the best craft of the type available. Price reasonable. Address STANLEY M. SEAMAN, 220 Broadway, New York.



FOR SALE—31-foot Launch, with standing roof; beam 6 ft. 5 in., draft 30 in.; built fall 1906; used but few times; boat of best construction; finely fitted; equipped with 20 horsepower Buffalo motor; speed 11½ miles; complete electric outfit; guaranteed in first-class condition. For further details apply WILLIAM GARDNER, 1 Broadway, New York.

No. 3593. FOR SALE—Auxiliary Cruising Yawl with c. b. in keel, 60 x 40 x 15 x 5.6; built in 1903 by Read Bros., Fall River, Mass.; flush deck aft of house; A-1 construction throughout; owner's quarters consist of a stateroom and saloon sleeping six comfortably, neatly finished in white enamel, gives 5 ft. 3 in. head room; lighted by electricity; bath-room, toilet room, large galley and crew's quarters; 25 h. p. 4 cylinders Standard motor, drives her 8 actual miles an hour; electric dynamo and storage batteries supply lights throughout yacht; completely equipped for cruising, including Palmer launch and dinghy in davits; everything in first class condition throughout; considered one of the best built boats of the type, an excellent sea boat, comfortable and fast under all conditions. Price reasonable. Inspectable this city. Address

STANLEY M. SEAMAN,
220 Broadway, New York.



NO. 5199. FOR SALE—Twin-Screw Power Houseboat, designed by Henry J. Gielow; built 1906; 85 over all 23.6 beam, 4 draught; mahogany house on upper deck, used as smoking and lounging room, has stairway at after end to dining saloon below; extra heavy construction throughout; owner's and guests' quarters forward consist of a stateroom 16 x 10, with double brass bed; off of this room is private bath; off of passageway, on port side, are two staterooms, each with upper and lower berths; between these rooms is another bath-room. These quarters give over 7 feet head room; lighted by acetylene gas and heated by hot water system. Staterooms finished in white enamel; dining room amidships, decorated in Flemish by Tiffany Studios. Captain's, cook's and steward's staterooms, engineer's berth, two separate berths for crew, latter's bath, etc.; galley and engine room; two 70 h.p. Twentieth Century motors drive her 10 knots an hour. Completely equipped in every department, including 21-foot naphtha launch, gig and dinghy in davits, binnacle and compass, draperies, everything being of the best. An ideal family boat, fitted with reliable power, affording excellent accommodations and seaworthiness. Inspectable New York.

Address

STANLEY M. SEAMAN,
220 Broadway, New York.

No. 3334. FOR SALE

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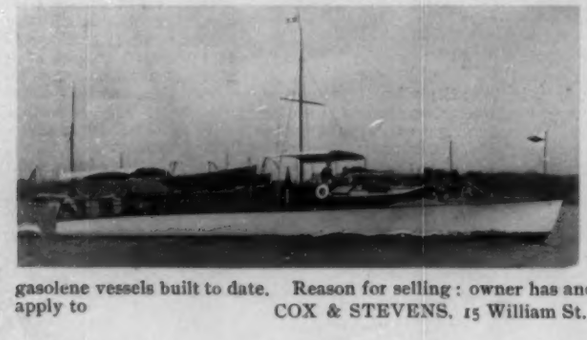

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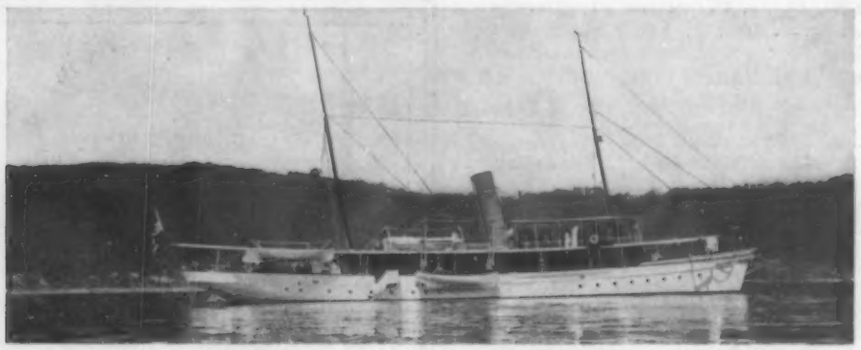

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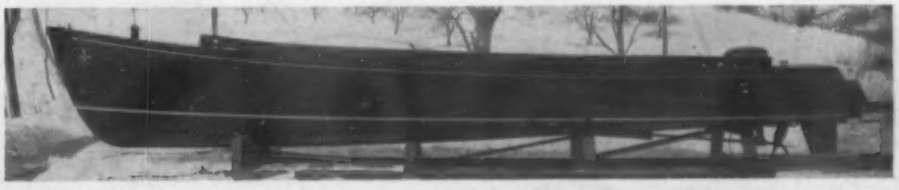

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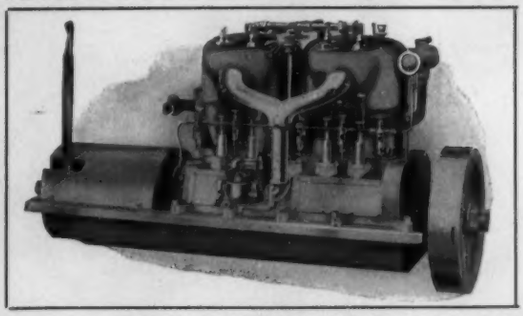

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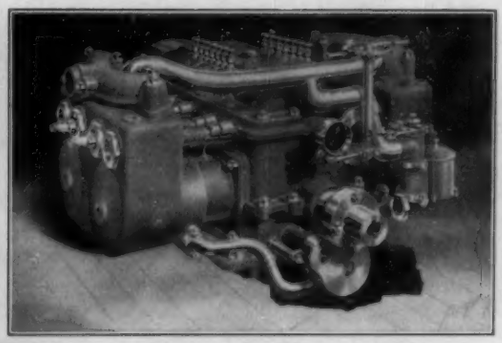

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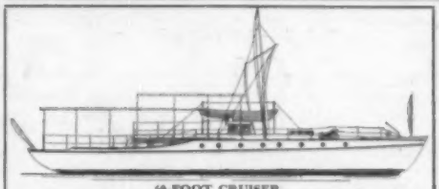

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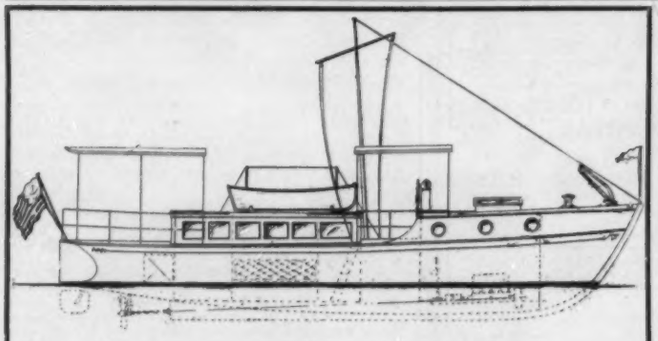

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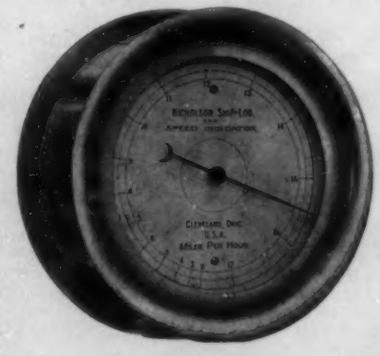

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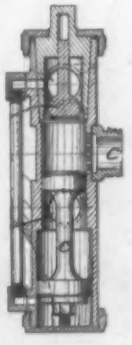

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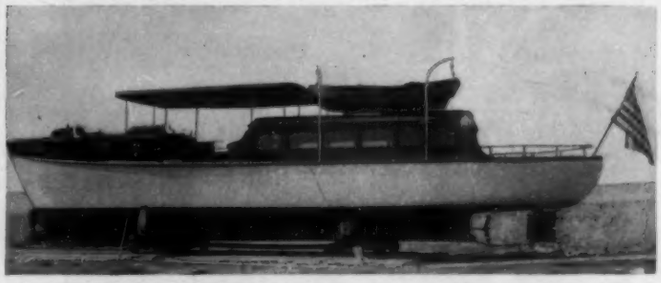

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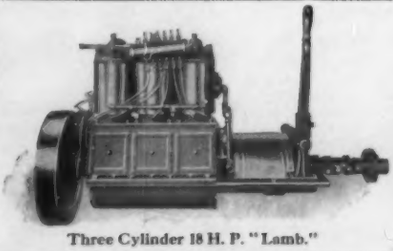

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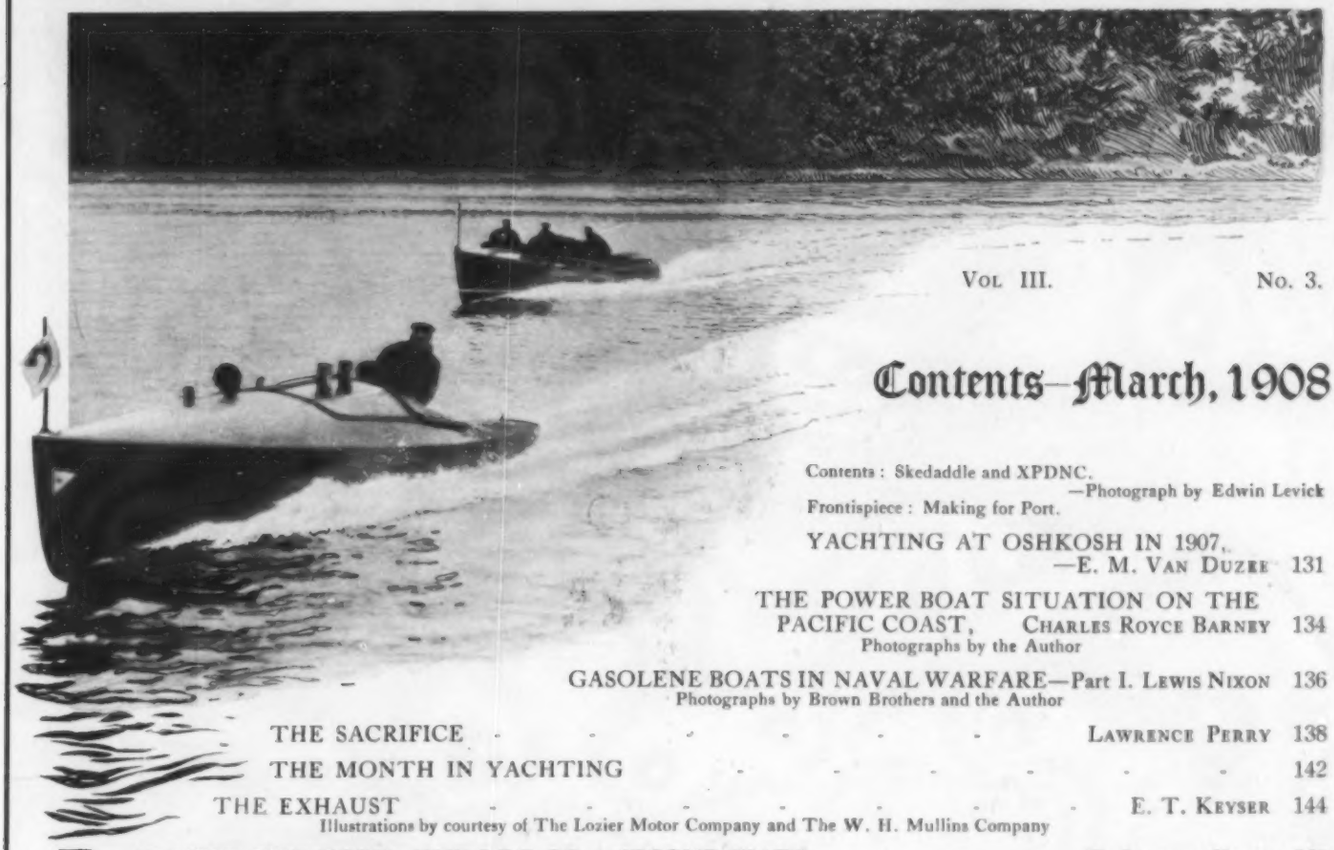

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MAKING FOR PORT.

YACHTING

VOLUME III.—NUMBER 3

March, 1908

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TROUBADOUR, THE CHAMPION 38-FOOT SLOOP OF THE INLAND LAKES.

Yachting at Oshkosh in 1907

By E. M. VAN DUZEE

TROUBADOUR of the White Bear Yacht Club and Buccaneer of the Minnetonka Yacht Club are the champion yachts of the Inland Lakes, in the 38-foot and 32-foot classes, respectively.

Troubadour was champion in 1906, and by winning again last year, secured permanent ownership of the Norton Cup, which has been the Class A trophy since the formation of the Inland Lakes Yachting Association ten years ago.

Second places went to the same clubs, Minnetonka, representing the Minnetonka Yacht Club, winning it in Class A, and Gopher of White Bear, 1906 champion, taking second place in Class B after being tied with Virginia of Oshkosh at the end of the regular series.

The Executive Committee announced that the first race would be triangular and the second, windward or leeward and return, and alternately thereafter. The distance was the same in either case. A six-knot triangle was laid out, with the home buoy in front of the club house and the outer marks to the northeast and southeast. The course was logged and the buoys set by a civil engineer and did not vary 100 feet from six nautical miles. The boats were sent twice around.

The Class B race was on Monday. Rain had been falling all night and the sky was overcast and the lake covered by a mist at the time for starting. Buoys could not be seen a half a leg away and courses had to be laid by guess. At the end of the first round a terrific rain squall broke over the lake, making it impossible to see more than a hundred yards.

At the same time the wind shifted nearly forty-five degrees, making it all the harder to maintain a true course. The first four boats were well bunched near the home buoy at the time the squall broke, but Show Me had started on a short tack to port, and the shift of wind and inability to see shore, buoys or other boats caused her to fall more than a mile away from the course.

THE HOME OF THE OSHKOSH YACHT CLUB.

Buccaneer made the best of the squall, completing the first round 7 seconds ahead of Twenty-Three and 18 ahead of Gopher. Virginia was only a few seconds behind the White Bear boat and Show Me came up in about 20 minutes.

The order remained unchanged during the second round, but Buccaneer stretched out her lead to more than four minutes. Gopher was 22 seconds behind Twenty-three and a minute and a quarter ahead of Virginia. Show Me had dropped back to more than 27 minutes behind the winner.

For the afternoon contest, the weather cleared somewhat and there was no rain, but the wind was fluky. It was nearly from the west, so that no leg of the triangle was a true beat. The boats were sent away to the northeast buoy on a quarter run. Oodiks certainly proved herself fast off the wind in light airs. She started fifth, a half-minute after the gun, and took a lead of 42 seconds on the first leg. Thereafter her lead varied, at one time being nearly two minutes over the second boat, and she came in nearly a minute and a half to the good.

The start was very close. Black Point crossed at five, Glyndwr at seven, Troubadour at ten, Minnetonka at eighteen and Oodiks at thirty seconds after the gun. Pats III and Clhosa were delayed and crossed two and four minutes later.

Black Point and Glyndwr engaged in a fierce luffing match during the first half of the run, getting nearly a quarter-mile off the course. This gave the next three boats an advantage, two of them cutting in ahead. Oodiks turned the first mark 42 seconds ahead of Troubadour, which was 27 seconds ahead of Black Point. Minnetonka had taken a thirteen-second lead over Glyndwr during the latter's jockeying.

On the second leg, a beam reach, Glyndwr pulled up into second place, 37 seconds behind Oodiks and a quarter-minute ahead of Troubadour and Minnetonka, which rounded exactly together. Pats III had taken fifth place away from Black Point. Just as the boats turned the south-east buoy, the wind shifted into the south, making the third leg almost a quarter run. Minnetonka showed her speed on this leg, passing Glyndwr and Troubadour, but Oodiks had increased her lead to more than a minute and a half.

At the northeast buoy, the second time around, Pats had nosed in four seconds ahead of Glyndwr, but the latter regained her position on the fifth leg. Otherwise the order remained unchanged in the second round, Oodiks coming in a winner by a margin of a minute and 27 seconds.

On Tuesday morning, the Class B yachts were sent over a course which was supposed to be two knots dead to windward and return. Buccaneer crossed the line more than a minute ahead of Virginia and eleven minues ahead of the time limit. The Class A boats were sent out in the afternoon, with the result, a fluke because of the wind. Minnetonka was in the lead. Wednesday morning it took the 32-footers an hour and a half to go two miles and the race was called off. In the afternoon the outlook was even less promising than in the forenoon. The yachts were towed up to the starting line and drifted listlessly about, sometimes without steerage way. When the gun was fired, all were within two lengths of the line; yet it took the last boat a minute and a quarter to get across.

As Tuesday's race had not been finished, this became the second event of the third day and the boats were sent to windward and return. Whenever there was a breeze it seemed to come from the southeast, so the regular southeast buoy of the triangle was used as the outer mark.

The boats got across the line in the following order: Oodiks, Troubadour, Clhosa, Pats III, Black Point, Minnetonka and Glyndwr. On the drift to the outer mark, which took the leading boat an hour and a quarter, there was a complete shake-up in position. Minnetonka had taken the lead by an even minute over Clhosa. Oodiks and Troubadour, which were first and second at the start, had dropped back to last. Black Point was third, Pats fourth and Glyndwr had worked up from last to fifth.

The best run of the afternoon race was on the last leg, between Troubadour and Black Point. The latter had more speed, but by a fine exhibition of seamanship, luffing and bearing away at just the right instant, skipper Ordway managed to be five seconds ahead at the finish.

As the wind was favorable on Thursday, races were made in each class as scheduled. The course was triangular, so it was decided to give to the winner in the forenoon the Oshkosh Yacht Club Trophy Cup, which was to have been sailed for on the previous Saturday. Likewise, the winner of the afternoon received the Felker Cup.

Virginia of Oshkosh won the morning race after a close, hardly fought contest with Gopher and a heart-breaking finish with a margin of seven seconds. The wind was due south and the boats were sent to the northeast buoy first, making the outside leg a beat in the eye of the wind. The first leg was a quarter run, with spinnakers set to starboard. All the boats got away within a half-minute and in the following order: Gopher, Twenty-Three, Virginia, Show Me and Buccaneer.

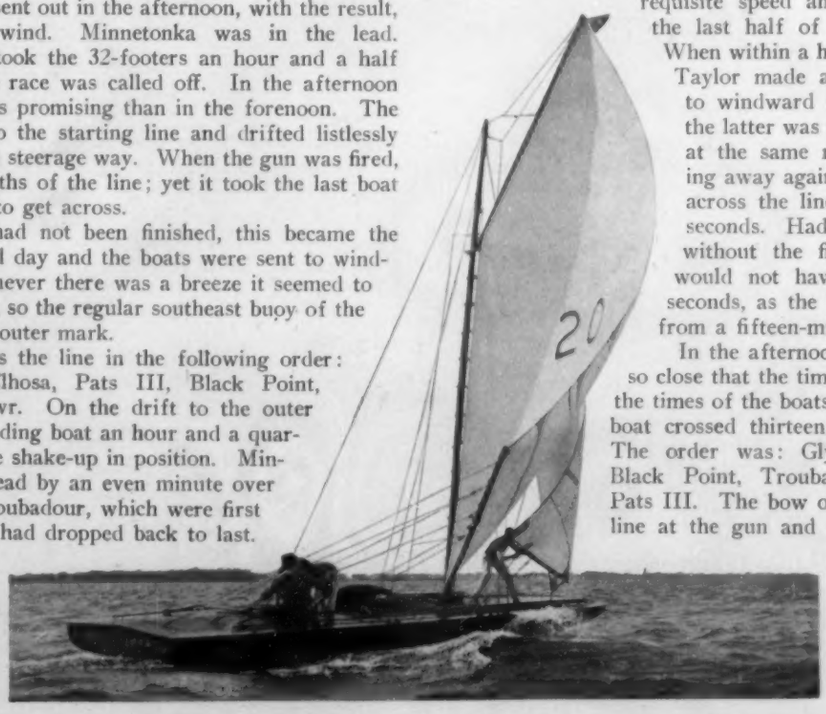
At the end of the first leg, Twenty-Three had accumulated a lead of a minute and a quarter. Virginia was second, 38 seconds ahead of Gopher. Buccaneer was fourth and Show Me last.

On the first tack in the second leg, Twenty-Three's side stay broke and her mast went by the board. She was well in the lead at the time. From that time on it was a race between Gopher and Virginia, as Buccaneer's side stay broke also, but her mast was saved, the boat completing the course and finishing last.

The Oshkosh boat showed remarkable speed to windward, but Gopher was faster off the wind. The White Bear boat passed Virginia on the third leg of the first round and continued to gain on the second run to northeast mark. On the second beat to windward, the Oshkosh boat outpointed and outfooted last year's champion and was 23 seconds to the good when entering the home stretch.

Gopher had gained 48 seconds on this leg in the first round and everyone looked for a repetition of the performance, bringing her in a winner. But, instead of trying at once to work to windward, Captain Taylor tried to pass under the lee of Virginia, as he did the first time. He did not have quite the requisite speed and the two boats sailed the last half of the leg exactly abeam. When within a hundred yards of the line, Taylor made a final attempt to shoot to windward across Bray's stern, but the latter was ready for him and luffed at the same moment and upon bearing away again, the Oshkosh boat shot across the line by a margin of seven seconds. Had Gopher held her course, without the final luff, the difference would not have been more than two seconds, as the boats were running free from a fifteen-mile wind.

In the afternoon the start, at 2.30, was so close that the timekeeper could not record the times of the boats, other than that the last boat crossed thirteen seconds after the gun. The order was: Glyndwr, Oodiks, Clhosa, Black Point, Troubadour, Minnetonka and Pats III. The bow of Glyndwr was over the line at the gun and the buoy was visible to the judges between her jib and mast. Had she been a foot further ahead, she would have had to go back and recross. Troubadour had the windward end of the line and Minne-



THE 38-FOOTER, MINNETONKA. SHE WON SECOND PRIZE IN THE CLASS A RACES LAST YEAR.

TWENTY-THREE SHOWING HER BILGE RUDDER.

BUCCANEER LEADING GOPHER ON LAKE WINNEBAGO.

tonka the leeward. The latter had more speed and sailed across the bows of the rest of the fleet; at the first mark the Minnetonka boat had a lead of 46 seconds over Troubadour. Aside from these, the boats were very close. Black Point was five seconds behind Troubadour, Pats six seconds after the Geneva boat and then, after seven seconds more, came Glyndwr. Oodiks was sixth and Clhosa ten seconds later. Minnetonka had the best of the sailing for the first mile and a half of the beat. Then Troubadour broke a jib halyard and it became a certainty that she would win. Whenever this boat breaks a jib halyard she always wins the race, no matter what her position at the time of the accident. At the end of the beat, the 'Tonka boat was an even minute ahead. On the beam reach for home, Troubadour picked up twelve seconds. After jibing at home buoy, the champion picked up eight seconds more, being forty seconds behind on entering the last beat to windward. It was in the last third of this leg that the race was won. For the first three tacks Minnetonka held Troubadour about even, but as the wind freshened a trifle she began to labor a little and Troubadour began to climb. In the last mile of this beat, Troubadour outpointed and outfooted her rival and led by a minute and seven seconds on entering the home stretch.

During the entire contest, Black Point was third, and after the first leg Clhosa was fourth. Early in the second round, Glyndwr broke her jib halyard, but unlike Troubadour she was not fitted with a spare one. She, therefore, dropped back from fifth to last place before the damage could be repaired.

Friday gave the yachtsmen better sport than any previous day. The Friday contest was to leeward and return. The start of the first four boats was close. Twenty-Three crossed at five, Gopher at six and Buccaneer at seven seconds after the gun, and Show Me was only twenty seconds late. Virginia got a very poor start.

Buccaneer was not sailed to her utmost, as her mast was split at the deck. On the first run Twenty-Three held her lead and increased it to a quarter-minute. Gopher was second, three seconds ahead of Show Me. Buccaneer was 34 seconds later. On the second run to the northeast mark, Buccaneer picked up on Gopher and was just three-quarters of a minute behind; Virginia had also closed up to a minute and a half from the 'Tonka boat, while Twenty-Three kept her distance, about two minutes behind the third boat.

On the last run to the outer mark, all the distances were increased. Gopher was a minute and 32 seconds ahead of Buccaneer, which was 2 minutes and 27 seconds in the lead of Virginia. Twenty-Three was six minutes later. Gopher negotiated the last two-knot beat to windward in 31¼ minutes, finishing 2 minutes and 33 seconds in the lead. In the afternoon the wind increased in velocity, but hung in the southwest. Several of the Class A boats started with reefed sails. The race was the most interesting of the week. Minnetonka had a secure grip on first place, and had she finished in fourth place or better would have won the championship, unless Oodiks should have been first or second.

On the other hand, Oodiks was only two racing places behind Minnetonka, and had Troubadour won and Oodiks taken second place, with Minnetonka fourth, the Neenah-Nodaway boat would have been champion.

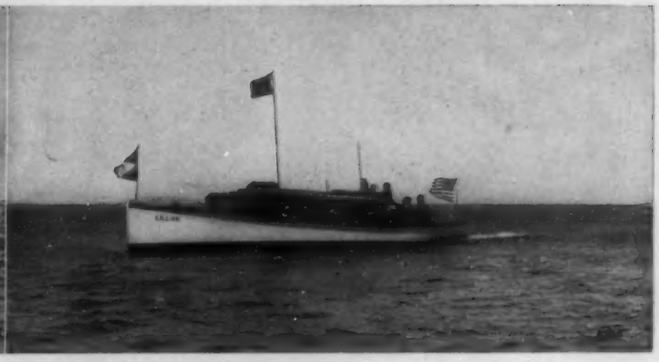
Therefore, when the starting gun was fired there were three possible champions. On the run to the northeast buoy, Minnetonka overhauled Black Point and led her by eight seconds. Pats was third, 22 seconds behind. Troubadour had crawled up from last into fourth place, being seven seconds behind Pats and six ahead of Oodiks. Clhosa passed Glyndwr.

GOPHER, THE 1906 CHAMPION IN CLASS B.

Troubadour and Black Point made a short starboard tack near the buoy, while all the others came around the buoy onto the port tack at once. Troubadour outpointed Black Point, but was slightly handicapped with her reef. When about a half-mile from home buoy, Black Point and Clhosa both crossed Troubadour's bows on the port tack and the latter at once shook out her reef. Pats had held her first tack up under the shore and was in the lead at the buoy.

The Oshkosh Yacht Club maintained its former standard for hospitality, but weather conditions were so unfavorable that the regatta was not a success. The management left little to be desired, and in only one particular could it be criticized. That was the way the boats were brought from Lake des Morts.

ROAMER, A 30-FOOT RAISED-DECK CRUISER WHICH HAS 3,500 MILES TO HER CREDIT SINCE LAST MAY.



HUNTING TRUNK CABIN CRUISER, LILLIAN. SHE COMBINES GOOD CRUISING ACCOMMODATION WITH SPEEDINESS.

The Power Boat Situation on the Pacific Coast

INTEREST IN MOTOR BOATING ON THE WEST COAST IS GRADUALLY AWAKENING AND THE COMING SEASON IN THIS BRANCH OF SPORT GIVES PROMISE OF GRATIFYING RESULTS—HERE POWER BOATS MAY REMAIN IN COMMISSION ALL THE YEAR AROUND, A FACT OF WHICH YACHTSMEN OF SAN FRANCISCO ARE BEGINNING TO TAKE ADVANTAGE—NEW BOATS FOR 1908

By CHARLES ROYCE BARNEY

Photographs by the Author

INTEREST in motor boating on San Francisco Bay and vicinity has been of very gradual growth. While the yacht clubs have for over twenty years maintained a steadily increasing interest in sailing and, years ago, formed an inter-club organization in the interest of the sport, the power boat contingent, for some reason not easily explained, has showed a decided lack of cohesiveness, and each boat owner has jogged along in his own way, independent of his neighbor and showing only an occasional desire to coöperate for the good of the cause.

Consequently, power boat history in the past, as far as this section is concerned, would consist principally in the logs of a few individual owners interspersed with some disconnected races, few and far between.

With the rapid improvement made in marine engines, cruising boats and general equipment, however, of late years, and the appearance on our waters of some new and fast types, a revival of interest has been very apparent, the first symptom of which was evidenced in the demand on the part of the power boat men for a little more attention on the part of their clubs.

Recently, an informal meeting was held at Belvedere by a number of the power boat owners there, looking toward the organization of a motor boat club. This club proposes to have a workshop and ways for the convenience of its members and also to hold races through the season at regular intervals.

The trade winds, which blow with great regularity on the Western coast from March to November with an average velocity throughout the season of not less than eight or ten miles an hour, frequently reaching twenty-five or thirty miles, make an ideal sailing season in summer. But the lack of them in winter makes the power boat conditions during those months ideal, as, except during the few southeast storms which visit us in the winter months, the air is never more than sharp enough to be bracing, the water as smooth as a floor, and the possibilities for extended cruises and racing are unequaled. Power boats in short, can be kept in commission the year around.

HAWKEYE, A SEA-GOING PACIFIC COAST CRUISER, WHOSE GRACEFUL LINES AND LIBERAL HEAD ROOM PROMISE SPEED AND COMFORT.

With little exception, the boats carrying the higher horsepowers on this coast are equipped with Eastern built engines, as the lightness of their parts and compactness are so much in their favor where pleasure boats are concerned. In the smaller boats the engines installed are products of local manufacturers who, in the main, put in heavier construction throughout.

One of these companies is about to replace in La Boheme, Mr. F. A. Greenwood's handsome cruising boat, a 40 horsepower with a 50 horsepower of the slower speed type. La Boheme was launched in 1906. It is a commodious cruising boat, 40 ft. over all, 9 ft. beam and 3 ft. 6 in. draft. Full control of the boat can be had from either engine room bridge or pilot house. The lighting of this boat is furnished by storage

THREE VIEWS OF HULL OF KONOCTI, A 38-FOOT CRAFT OF NOVEL DESIGN. THE KEEL IS ENLARGED TO FORM A SECONDARY HULL, WITH DISPLACEMENT ENOUGH TO FLOAT MOST OF THE WEIGHT OF THE CRAFT. KONOCTI IS EXPECTED TO DO SOMETHING STARTLING IN THE WAY OF SPEED.

battery and dynamo, as well as by an acetylene plant. The main cabin, 11 ft. long, is fitted with four Pullman beds. The finish is mahogany and cedar throughout. Her owner is very fond of deep water cruising and already has made several trips along the coast.

The accompanying cut of Mr. Robbins' Lillian illustrates a model which is a compromise between a speed boat and a cruiser. She is 53 ft. over all, 6 ft. beam and 3 ft. draft. Her extreme beam is carried well aft, giving her an exceedingly sharp bow and good speed lines. She is beautifully finished in mahogany and teak throughout and equipped with a 40 horsepower engine of jump spark type, with full control from cockpit. Though fast, she has ample cabin and cruising accommodations as well, and will be further fitted for the coming season with extra conveniences for long trips.

The most notable innovation in the local motor boat field is that found in the new speed boat, Konocti, which is being built for Prentis Gray and E. J. Holt. As seen in the illustration of this craft, what would ordinarily be a keel has been enlarged to such proportions that it really becomes a small hull, sufficiently buoyant to support and float practically all of the weight of the boat proper, the bilges being very full and flat where they meet this, the carrying portion of the hull. In addition, the lines are so carried out that the propeller turns in water unbroken by any wake, thereby giving it the hold so much sought after by designers of fast motor craft.

The dimensions are 38 ft. over all, 5 ft. 6 in. beam and 21 in. draft. It is built throughout of mahogany with the exception of the ribs, which are oak, 5 in. apart at centers. Frames are locked into stringers and all fastenings are of copper or brass screws. Two galvanized iron cross straps are used, one in the stem and the other aft of the cockpit, to stiffen the deck planking. All seams are flush, with no calking, the material being specially selected and seasoned to fill the requirements demanded by this feature of the construction.

The deck runs aft 19 ft. to the cockpit, with a very pronounced crown, a solid bulkhead separating this space from the cockpit. The first six feet of the stem is taken up with an airtight compartment, and directly behind this is a second compartment, which can also be made airtight and contains an auxiliary gasolene tank of twenty-gallon capacity. The next seven feet is taken up with the engine, forty-gallon gasolene tank and storage battery, which rests on a bed twenty-six feet long, forming part of the foundation of the boat.

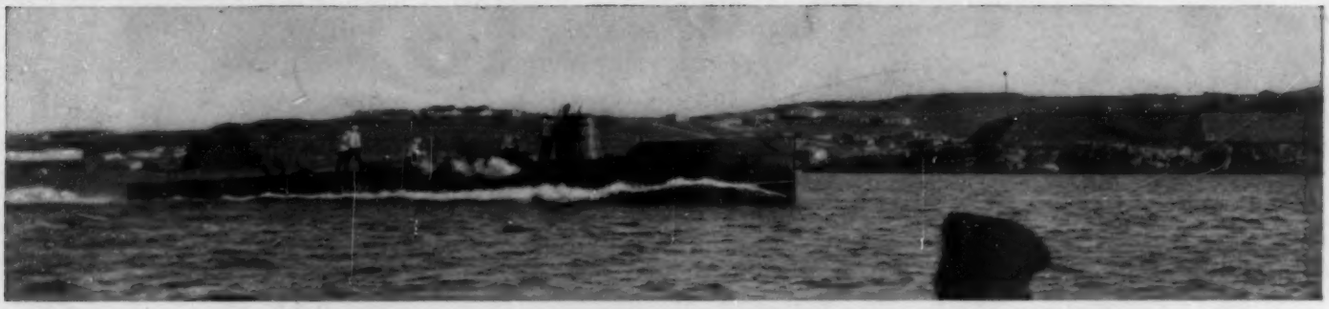
The cockpit takes up eight feet and the remaining eleven feet aft is decked over and used for locker space, which can also be made airtight. The motive power is a 45-65 six-cylinder engine, each cylinder 5½ in. in diameter with a 6-in. stroke, normally turning over 600 revolutions, which can be increased to one thousand. The shaft connects with a bronze 22-in. three-blade propeller of 36-in. pitch. The weight of engine and equipment complete is 995 lbs.

The system of ignition by means of dynamo and storage battery is used, and all control of engine as well as steering gear is from the cockpit. A watertight hatch will cover the engine when in a seaway, air being furnished by two ball-shaped ventilators. All fittings are of brass, nickel plated.

The design of the hull is patented by Mr. Twigg, the builder, this being the second boat he has constructed on these lines. The first one, with only a twenty horsepower motor, was credited with a speed of fifteen miles an hour, so of course the trial trip of the Konocti is anxiously looked forward to, as it is expected that she will be a record breaker.

One of the most enthusiastic followers of the motor boat game here is Lawrence Wagner, a member of the San Francisco Yacht Club, who launched his cruising cabin launch Roamer last May and is keeping her in commission winter and summer. Already some 3,500 miles have been covered by this little cruiser, and she is, without exception, the best sea boat of the pleasure craft in local waters. Her dimensions are 30 ft. over all by 8 ft. beam, 3 ft. draft. She has a bridge deck between cabin and cockpit where she carries her full control of engine and steering gear. Her cabin is finished in mahogany and oak. She was built after plans furnished by Mr. Wagner. One of her most remarkable feats was the towing off shore, in November last, of the barkentine Archer, a 2,000-ton freight carrier, which, with a cargo of 11,000 barrels of lime, was fast drifting on the rocks just inside the Golden Gate at the entrance of San Francisco Harbor. Mr. Wagner happened along in the nick of time and the fable of the lion and the mouse was reënacted as she took a line from the barkentine and pulled her head around as she lay in irons and towed her a sufficient distance off shore to get the wind and escape the treacherous set of the tide toward the rocky beach.

In conclusion, it is proper to say that the interest in power boats is steadily growing out here, and hull models as well as engineering equipment are showing marked improvement along modern lines. The average yachtsman who has spent his life upon windjammers is not the one to take innovations kindly, especially where it involves a decided change from the things he has known and done. But as the full significance of the gasolene craft has dawned upon them they have not been slow to reverse their former attitude, as in a commercial way the fishermen out on the West Coast have adopted the "kicker," so now we find motor boatmen who formerly were steadfast sail-boat owners are now operating power craft, finding them, or cruisers, a decided improvement over boats which must depend upon the wind for propulsion.



A GASOLENE TORPEDO BOAT. A TYPE OF CRAFT WHICH, BY REASON OF THE CONVENIENCE OF ITS FUEL AND ITS ABILITY TO GET UNDER FULL SPEED INSTANTLY, IS SUPERSEDING THE STEAM-POWERED CRAFT.

Gasolene Boats in Naval Warfare

PART I

By LEWIS NIXON

THE artistic title page of this number of YACHTING shows a night scene of a torpedo boat in action.

The torpedo boat in its original inception was a small vessel of great speed and small target, delivering its missile by stealth under cover of darkness or fog, or by surprise.

As the speed increased, so did the bulk, and with it increased size of target, greater visibility and concurrent reduction in possibility of sudden attack.

The rise from 18 knots and 40 tons to 33 knots and 800 tons has been by gradual stages.

But we build torpedo boats to fire torpedoes. Can a boat of 800 tons, whose only protection is speed, that is throughout almost the entire length filled with steam pipes and fittings of the most fragile character, that carries no armament, that cannot successfully attack even an ordinary 400-ton destroyer, and that is of limited endurance, be said to be the ideal torpedo vessel?

However, the building of such vessels turns the eyes of the world again to England as the producer of war craft, just as in merchant ship production the building of the Lusitania and Mauretania was a challenge to the German shipyards and an evidence to the world that England could surpass the proudest achievement of her new rival.

The recent remarkable performance of the new German destroyer in making over 33 knots on much less displacement than the English boats, is an evidence that the competition is not even yet all one way.

The poorly conceived scout vessels projected a few years ago were, nevertheless, a challenge and the challenge was met by France with a programme of armored destroyers that could successfully meet the scouts of England and America, and by England with ocean swallows of 800 tons, fleet of wing and dependent upon such fleetness as a protection against the scout ship.

We must assume as an axiom that, other things being equal, the vessel which presents the smallest target is the more efficient when the conditions of torpedo warfare are taken into account.

It will be answered that greater bulk gives greater seaworthiness. Well, within wide limits, I admit this, but I have gone out in a Black Sea squall and easily run faster than a line of destroyers and torpedo boats ranging from 100 tons to 350 tons when running into a head sea with a boat of only 35 tons. Still, on a boisterous night, the bigger and more powerful boat would have an advantage.

But we now run up against another point.

The steam-driven boat is unsuited to torpedo attack. The thraldom of steam has been endured because, up to the present, it had to be endured.

Let us take as a text a statement by London *Engineering* of June 23, 1905:

"The tendency of war vessels is always to increase in size and costliness. We see that in battleships, in cruisers, in gunboats, and especially in torpedo craft. Putting aside the old 60-foot second-class boats which were restricted in size to allow of them being carried by big ships, we commenced with about 90 feet for a first-class boat. This has now become, by gradual increment, 150 feet. Beyond this we have the destroyer of 220 feet or more, but before long we may look for a 300-foot destroyer, unless the demands made upon these vessels are checked. Craft of these dimensions are too big and too costly for torpedo operation and are unnecessarily big for destroyer work proper, if reasonable scantlings be used. The great virtue of the torpedo boat flotilla rests in numbers, combined with the small target afforded by each unit."

In this last sentence, I think this paper sums up the proper policy in torpedo boat construction.

Can we, by using a smaller displacement, produce the same results?

By the use of gasolene engines we can obtain the following advantages, which are not elaborated because it is impossible in so short an article:

For the same power the gasolene engine is far lighter than a steam plant. As compared with steam, they save in fuel weight and fuel consumption. They do away with need of fresh water, one of the greatest drawbacks to steam propulsion and which, though very ex-

BOW VIEW OF A GASOLENE TORPEDO BOAT, SHOWING CONNING TOWER FOR PROTECTION OF STEERSMAN. THE TREMENDOUS SPEED OF THESE CRAFT RENDERS THIS PROTECTION NECESSARY TO PREVENT BLINDING OF STEERSMAN BY THE SPRAY.

pensive, is rarely referred to. They take up far less space, allowing better quarters for the crew and room for other needed purposes.

Far less subject to derangement. An opening in the boiler room of a vessel lets out air pressure and lowers the efficiency, while throughout the engine and boiler room there is a mass of auxiliaries and pipes under pressure, the slightest interference with which spoils the proper working; while with the break or puncture of the smallest pipe, escaping steam scalds and kills. The gasolene engine requires no pipes or compartments under pressure.

The gasolene plant is not subject to such rapid deterioration as the steam plant, while its simplicity and reliability are abundantly demonstrated.

With the gas engine there is no strain upon the crew; men are not worn out in closed fire rooms, shoveling coal into hot furnaces; the engineers are not exhausted, when running, in getting the vessel ready nor in laying up the machinery and letting down pressures after running.

The absence of great furnaces in the interior of the vessels, the larger and more comfortable quarters possible, make life easy and more endurable in the gas engine boats.

A visit to the hot, stifling, damp engine room of a steam torpedo boat and the cool, comfortable engine room of a gas engine torpedo boat is all that is necessary to show the vast improvement of the latter.

About one-fourth the number of men are required for the same power.

The difficulty of coaling at sea is avoided.

A man-of-war under forced draught can be seen for miles by the smoke by day and by the sparks at night, while the hum of the blowers, on a calm night, can be heard for a great distance.

The gasolene engine is smokeless, sparkless and noiseless.

Absence of tall smokestacks and the many obstructions of ventilators makes the deck better for handling guns and torpedoes and greatly reduces the chance of damage to the crew by the explosion of light shells.

In getting under way on several hours' notice, a great expenditure of coal fuel is necessary. The gasolene engine is ready to start instantly by simply turning the lever.

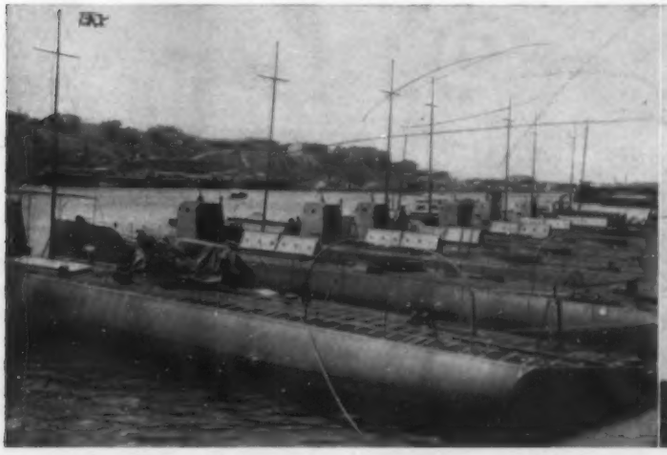
In time of war, vessels on the scouting or fighting line, especially destroyers, must be ready at all times to go at full speed. This cannot be done from banked fires or even low steam. So there must be a constant blowing off of steam and great loss of coal and water, even when lying still.

To get up steam for full power is the work of hours and no estimates of coal consumption ever take this into account.

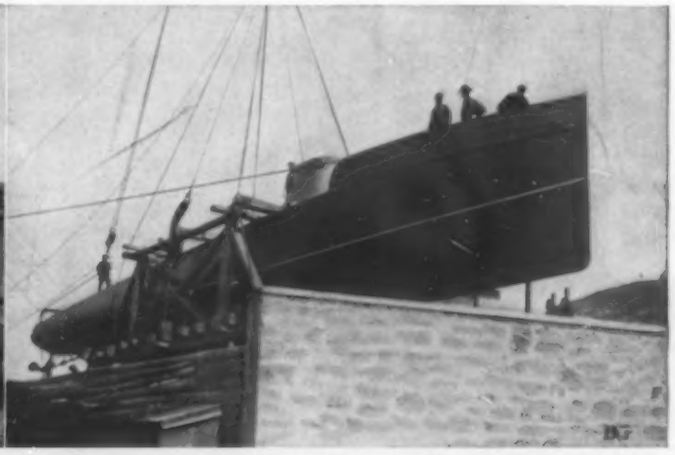
The gas engine is ready at all times, has no "stand-by losses," as fuel is only burnt when the engine runs, and thus avoids all wastefulness of fuel and time inseparable from the steam boiler.

Even under the best conditions, the steam vessel must clean fires, lowering the speed, wasting coal, exhausting the crew, while long service in the heated fire rooms is beyond human endurance. The average speed under full speed is reduced by such cleaning far below the speed claimed.

The modern high pressure water tubular boiler is subject to rapid deterioration; bad water or the least interference with the circulation leads to burnt tubes and great loss of efficiency, and no matter what type of engine be used, the disadvantages of the man-fired boiler remain and limit the efficiency of destroyers and torpedo boats to such an extent that they have never, in actual warfare, done what they should. The press has of late told almost daily of deaths due to explosions of boilers or steam pipes where deterioration has eaten up the small margin of safety possible with extreme demand—but think of the accidents that occur unchronicled!



FLOTILLA OF GASOLENE TORPEDO BOATS. OBSERVE THE LOW FREEBOARD AND THE FEW PROJECTIONS TO CREATE AIR RESISTANCE UNDER SPEED AND SERVE AS A MARK TO THE ENEMY'S GUNS.



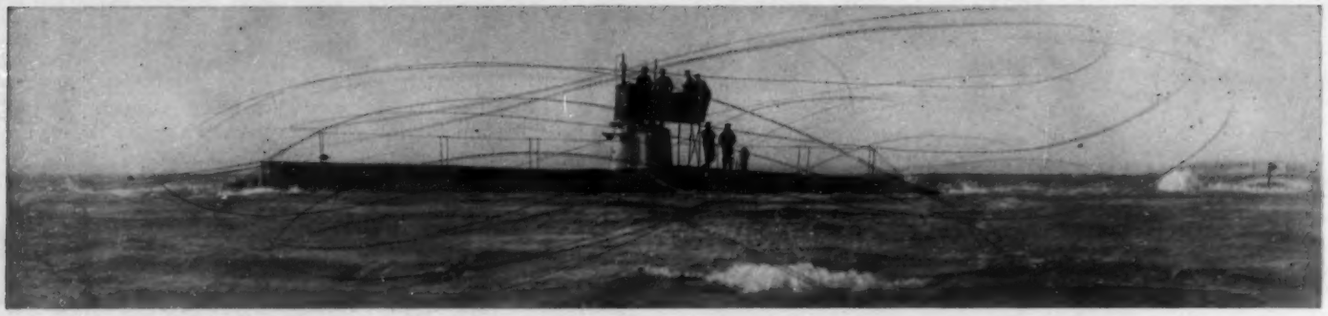
VIEW OF UNDER BODY OF A GASOLENE TORPEDO BOAT, SHOWING THE SHARP KNIFE BOW WHICH DIVIDES THE WATER AT HER ENTRANCE AND THE ROUNDED SKIMMING-DISH AFTER BODY TO COUNTERACT THE TENDENCY TO "SQUAT" AFT.

Owing to the limitations due to stand-by losses of coal and water the necessity for working up gradually to full speed, if the vessel has been running slowly, or lying with banked fires, the frequent cleaning of fires, and owing to the limited endurance possible with the steam boilers it can be stated as an axiom that *"a gas engine boat of 26 knots is equal to a steam driven boat of 28 knots in actual travel* at full speed, when they are of the same theoretical endurance."

As the gas engine boat can easily be given an endurance several times greater, the comparison is immeasurably to its advantage when extended.

Owing to their great economy, reliability and endurance, gas engines are rapidly becoming installed for manufacturing purposes on land, where they are installed in units of thousands of horsepower, and late experiments in America have shown decided gain over steam for many railroad purposes, especially where water is difficult to obtain.

They are run on land for months at a time without stopping or cleaning (impossible with steam plants), while reliability upon the sea is shown by the voyage of Gregory, which vessel went



A GASOLENE SUBMARINE TORPEDO BOAT. THE USE OF THE INTERNAL EXPLOSION MOTOR, WHICH DOES NOT CONSUME THE OXYGEN OF HER AIR SUPPLY, AS WOULD THE FURNACE OF A STEAM ENGINE, LENGTHENS HER ABILITY TO REMAIN SUBMERGED.

from New York to Sebastopol, Russia, every mile under her own engines and without a tender for any part of the voyage.

The fleet of destroyers sent from the United States to Manila by the United States government had a collier as tender and went via the West Indies in the quietest weather, coaling, even then, at sea, while Gregory put straight out for the Azores in the winter.

The best evidence of the behavior of the hull and engines on the trip across the Atlantic was that the crew expected and were anxious to return to America in her, not being aware of her sale.

In all the trial trips incident to the construction and rigid inspection of a fleet of ten vessels, not one trip was postponed or delayed due to defective workmanship or breakage of any part, or poor performance. Four small gunboats have just made the trip from New York to Santo Domingo in winter gales without a mishap.

The gasolene engine produces no vibration and is noiseless, so that the drawbacks to using wireless telegraphy found with the steam engine boat are avoided.

The great dependence upon coaling stations will be avoided.

The gas engine is the only engine for tropical work.

Taking all the above facts into consideration, a proposition made a few weeks ago to a foreign government to "take the steam torpedo vessels, install gasolene engines of 50 per cent. more power, double the endurance, double the armament and make the boats ten years ahead of date instead of ten years behind," seems not difficult of accomplishment.

I prefer gasolene because it is the liquid which gives the best results, as it can be converted into a gas more quickly and more simply than any other substances.

I have tried the best of the arrangements used with kerosene abroad and find them cumbrous, inefficient, complex, uncertain and slow. In our launch and yacht fleet, the American wants an engine that is always ready, but even granting a certain advantage that might make up for waiting, the smell of the kerosene engine is most disagreeable and penetrating.

I have heard men blessed with the "little knowledge" hold forth against gasolene and yet want to fill double bottoms with crude oil from which the gasolene had not been removed.

I realize of course that in battleships we shall use oil or coal gas products, but I am now talking of torpedo boats and destroyers, and I am satisfied that the best engine for such boats is the gasolene engine.

In my opinion, based upon an extensive experience, gasolene is the best fuel to employ, next to which comes alcohol. The prejudice existing against gasolene will soon disappear, when its ideal adaptability to explosive engine work comes to be appreciated and this appreciation will be forthcoming when it is found how much more can be accomplished by its use than with any other fuel.

Up to 20,000 horsepower installations the gasolene engine has tremendous advantages.

All the explosion takes place in the cylinders and the charge is not fired until it is ready for the spark which ignites it. The substance which passes most easily into a gas and which needs no retorts or producers is gasolene in America, petrol in England, essence in France, and benzine in Russia. Its particular adaptability to gas engine service and what gives it its great value and secures its employment, is the fact that it passes readily from a liquid to a gaseous state. For this reason, those unacquainted with its qualities object on the score of possible danger to the very characteristic that makes it so valuable. When mixed with the right quantity of air the mixture is explosive. If it were not, we should not use it. Anyone who has seen an automobile with chauffeur vainly grinding away at a crank, each turn taking in gas and air and firing a spark in their midst, must realize that all mixtures of gasolene vapors are not explosive. Vessels run by such motors are now numbered by thousands and although the bugbear of explosion for a while prevented their use, confidence born of remarkably few accidents—and these nearly always traced to carelessness in filling the tanks—has now made this motor the coming favorite.

The Sacrifice

By LAWRENCE PERRY

HORACE MUMFORD, American representative of Barratry & Saunders, steamship agents and owners of questionable tramps, of Liverpool, settled his neck into his collar as William Nash, chief officer of the Havernon Grange, entered his private office.

"Ah, Mr. Nash," said Mumford, waving his hand in the direction of a chair which faced the desk and, incidentally, the glaring light of a window. The sailor sat, placed his peak cap over his knee and regarded the agent with a full, honest, level gaze, which gave that gentleman no advantage even with the light at his back. William Nash had blue eyes that filled when he felt a companion in sympathy and he had full, weather-red cheeks; a face with few lines. He was built powerfully and talked considerably less than he felt.

"Mr. Nash," resumed Mumford, "let's see, h'mm—you've had your master's certificate five years now—and without a boat."

"Yes, sir," replied Nash, and he smiled, showing big white teeth. But I've seen men with master's papers in the fo'castle . . . and so I didn't feel"——he suddenly checked himself. Often when alone he had rehearsed what he should say in this

regard if his owners ever gave him half an opportunity. . . . And now—well, he had allowed a full opportunity to go by. He bit his lips and flushed, but said nothing.

"You know the Annandale?" resumed Mumford, having waited for the completion of the sentence.

"Yes, sir, she sunk——"

"Yes, down the bay in a collision two weeks ago. . . . Well, we've taken her from the underwriters at a good price and have hired the Marriot people to raise her. When she's up and rebuilt —you're to command her. . . . No, not a word," he added, as the young man bent forward with a sharp exclamation of pleasure. "It's your due; we've been wanting to give you a ship and now you've got one. . . . It's nothing special of a boat, but what with general overhaul, refitting and the like, she'll do for a starter. . . . We'll have her up by Friday; then the Erie Basin and then—Captain Nash on his own bridge."

"Nash on his own bridge!" He repeated Mumford's words as though they concerned some objective person. "Mr. Mumford," he added, rising, "I've seen the Annandale everywhere, from the Black Sea to the Caribbean. I've seen her with her red plate patching, scuttering along like an old woman . . . and I've laughed with the rest and——But, there, Mr. Mumford, she'll scutter no more and she'll wear the best of paint. And, further, she'll carry all you give her—and ask for more. She—why, God, man, you've given me a ship of my own! I want——"

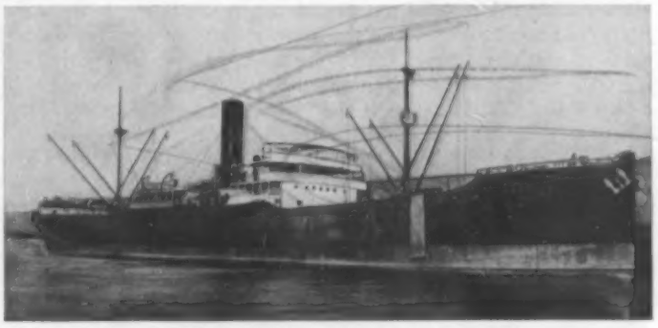
"Of course, of course," interrupted Mumford, holding out his hand, which Nash took. Then the new captain walked out of the office with sweet, golden lights dancing in his brain—lights which showed a greater perspective of actuality, opened as though by magic to a mind which had dreamed but vaguely.

One afternoon in March, Mumford walked up the gangway of the tramp, lying at a South Brooklyn pier, and, parting with William Nash, wished him good luck. Then he hurried ashore as though glad to get the craft off his hands, as indeed he was, although he had sent out many a rotten ship in his day. Still, when you figure that if a boat sinks your firm can make about twenty thousand dollars more from the insurance underwriters

"THE PATH OF MOONLIGHT FRAYING INTO NOTHINGNESS IN THE HORIZON."

than would accrue from the safe delivery of cargo, you are apt to have a bad taste in the mouth if not totally hardened, which Mumford was not. So, feeling the taste, he reminded himself of the fact that, in his experience, bad boats had lasted almost as well as good ones—or, at least, had waited until the crew was safe aboard some other vessel before taking the long dive, a thought which afforded him considerable comfort.

The sea was purple and quiet, the western sky benign with massed pearly clouds, as the Annandale put the old red Sandy Hook light vessel astern and took the lift of the vast inscrutable expanse lying ahead. The swinging light of the Navesink beacon blazed suddenly like a new sun; the masthead lamps of the light



THE ANNANDALE AT A SOUTH BROOKLYN PIER.

vessel rose and fell on the surge and William Nash, on the bridge, turned to look at them. The balm of premature spring and its tranquility rested on land and sea. A greyhound, ablaze with lights, raced for the bar and the music of stringed instruments hovered over her viewless wake. A hoarse voice broke the stillness.

"The watch is aft, sir."

William Nash straightened up.

"All right. Relieve the wheel—and the look-out."

Talmedge, the second officer, standing at Nash's side, looked at his captain and smiled.

"Navy discipline?"

"No." William Nash flushed. "I thought it was good to have things shipshape. They always did on the Grange. Do you think it sounds put on?"

Talmedge, who had spoken thoughtlessly and had rather expected an oath by way of reply, regarded Nash with a queer expression.

"Lord, no. . . . No. . . . It sounded funny on this bally hooker —on this boat, I mean. I beg pardon, I——"

Nash laughed and placed his hand on the younger man's shoulder.

"I know," he said. "It's small beers, anyway. . . . Shut up."

"Thank you." Talmedge turned to Tewson, the chief officer, who had just mounted the bridge, gave him the course and went below with his starboard watch.

All signs of the light vessel had disappeared now and the Navesink light was marked only by a great nebulous arm that stretched across the heavens and filtered away among the stars. The gloom of heavy, inscrutable waters was all about—they came in long, heavy swells unmarked by crests, hissing sullenly as the tramp lumbered on and on into the vastness of a lonely void.

William Nash felt the throb in the hull and it was like the throb of his own life. He passed Tewson on his way to the deck.

"Fine night, Mr. Tewson."

"Yes, fine." The taciturn chief officer packed his pipe with his thumb. "Too fine to last."

"Well, we'll get the good of it while it's with us, anyway. And if it comes on bad, why the Annandale'll justify herself, I fancy.

There was a perceptible thrill in Nash's words.

"If it's a bad storm she'd better be in dock," growled the chief officer.

"What?"

"I'm shaky of this boat. I was through her this morning,"

replied Tewson. "The plates are patched with cement and—well, there's been too many dollars saved."

"You can say that of any boat—money saved in repairs," said Nash earnestly.

"True," and Tewson shrugged his shoulders. "But it's better said of some boats than others.

Nash did not reply, his mood of exaltation had been utterly crushed. For a full five minutes he stood looking out straight ahead, along the path of moonlight, which went on and on until it frayed into nothingness on the horizon—and the path was cold, cold as a stiff mackerel on an ice floe. As though polarized, his eyes remained riveted on the narrow, heaving line, running like a faint cicatrix through the mellow night. Grotesquely, it rose and fell in a million places, whispering with a sinister breath, a chilling breath, until William Nash shivered and clasped his hands about the warm bowl of his pipe.

Then suddenly he turned and went below. In the mess room he found Talmedge, Maconache, the third officer, and Penwerthy, the chief engineer, lolling over huge cups of coffee and puffing copious clouds from their pipes. As they started to rise, Nash waved them to their seats.

"Sit down, gentlemen," he said, "and let's talk. I'm lonely."

Somewhere near Cape Sable the Annandale thrust herself into an easterly gale, and shivered, shivered with fright as it seemed to William Nash. But they drove her at reduced headway into the black riot; and she plunged on all through the night. Nash held the bridge until one o'clock and then, as the vessel seemed well on the edge of the storm, he turned in and slept, quietly, peacefully as a child, for it was a fearful buffeting his ship had got—her fire test and his—and she had gone on.

This meant something to him. It meant everything in the world—everything that was big and brave and inspiring. His ship was going on through a storm that would try the mettle of any ship, of any captain. And he had taken her on! What a thrill he had in resigning the bridge to Tewson, with a careless word or two about the subsiding weather. It was a life thrill, an emotion that dies only with memory, and it gilded his dreams.

A pitch of the ship threw him hard in his bunk. He awakened with a start, with a feeling he had slept for weeks. He lay, puzzled for a moment, and then as the vessel quivered under another blow he smiled, as a strong, confident man smiles. Evidently there remained yet more work for the Annandale and him. Well, the ship was ready—and so was he. There came a kick on the door. They wanted him, certainly. He wondered they had not summoned him before.

"Come," he shouted, leaping to the floor.

The door flew open and Talmedge, a dripping mass of oil-skins, stumbled into the cabin. The dull light of early dawn entered with him and, enveloped in it, the officer seemed a vague, clammy spirit. A wind slammed the door inward with a bang and swept a shelf full of photographs into a corner.

"Better come out, Captain Nash," he shouted. "The ship's canted a bit to port and down by the head a wee."

"Eh! Nash glared dazedly at the young officer. "God!"

"May not be so bad," said Talmedge. "But Mr. Tewson thinks if you'll hurry on deck——"

Nash brushed past him and stumbled out into the storm. A downward plunge hurled him to his knees and Talmedge, coming up behind, caught him by the arm. Nash shook himself free in nervous impatience and clambered down to the well deck, where Tewson was sounding the forehold, with all the gravity and professional bearing of a physician counting an accelerated pulse.

"Well, Mr. Tewson?" The captain's voice was harsh and unnatural.

"There's Hell's own flood comin' in here," replied the chief officer.

This was about 700 miles east of Boston; lat. 41.40 north; long. 61.11 west, approximately. The data seemed burned in the brain of William Nash. For, somehow, when he heard Tewson's report he neglected to order the pumps started—an omission supplied by an officer—his mind being occupied by a compelling thought, the distance from land.

Amid the terrible confusion of the gale, the shriek of a wind against which they were barely able to stand, the crash of waves and the groaning of the ship, he stood as one dazed. His eyes rested on the blur of figures in front of him and then traveled up, over the high, bulwarked bridge deck and beyond, to where a grey hill of water down which the vessel had just plunged reared astern. It was higher than the top of the funnel. Mechanically, he concentrated his mind upon this great wave as a means of readjusting his thoughts, of forcing them into normal grooves. How the Annandale had rattled down its slippery back! Now, as she laboriously rose out of the valley, the vessel really seemed to make sternway. Leaking! They were all driveling cowards if they said that.

As a drowning man fights for his life, so fought William Nash for his self-possession. His hands opened and shut and the veins in his neck swelled. The first officer's voice roaring a command seared his mind with a realizing sense of the conditions to be met as a captain, not to say a man. He glanced quickly about him.

"Mr. Tewson, who's on the bridge? . . . Talmedge, thanks." "I'm going to get some of that cargo out of that for'ad hold. . . ." "Reach the leak . . . stack freight against it. . . . Maconache,

SOMEWHERE NEAR CAPE SABLE THE ANNANDALE THRUST HERSELF INTO AN EASTERLY GALE.

Noted July 20/19

WITH THE ANNANDALE PERISHED TERROR FROM THE SEAS.

bring ten of these men with you and come with me. . . . Mr. Tewson, get the forem'st derrick boom shipped. . . ."

"Start your cargo in this weather!" Tewson's gruff voice broke into a harsh crescendo. "Open hatches with these seas floodin' the deck!"

"Why, damn it, the cargo's already started with this pitching. There, can't you hear it?" shouted Nash. "And the hatch there's half smashed already. I——" He stopped suddenly as though realizing that he was arguing with a subordinate. . . . "Come on!" Thus saying he sprang forward, followed by Maconachie and the men. As they pried off the irons, the hatch covering, already tried by the waves, fell into pieces. A rush of damp air, laden with a heavy, gaseous odor, met them, but without hesitating, the captain clambered down the iron ladder with the others, cheered by a lull in the storm, close upon him. It was dark in that hold. The dawn was veiled with heavy clouds and the light which filtered through the hatch was the merest suggestion of light.

Barrels had worked loose and were crashing to and fro with deadly momentum—dim, ill-defined, hurtling masses, the more terrible in their obscurity. Overhead, the figure of Tewson was faintly limned against the pale square as he blew his mate's whistle for the donkey-man to start his engine. The cargo boom swung over the hold and the pendant, with its iron hook, quivered into the gloom.

Nash glanced at the men cowering about one of the columns.

"Lively," he cried, "the sooner it's over, the better. We want that ta'kle." As he jumped for it, the vessel's bow rose high in the air and then pitched low, like a man falling down stairs. The boom, slatting heavily, broke from its leading lines and snapped out over the rail. The hinges ripped away and the end of the immense spar shot upward as the outboard end bore down into the raging sea. It rose under the impulse of a wave. The other end crashed to the deck and opened a jagged hole. Another pitch. The upper gear carried away and the boom disappeared into the ocean.

Below, the men grovelled behind protecting columns as the loose cargo went helter skelter with the ship in a rushing, crushing mass. Nash and Maconachie and several of the seamen were hurled against the port side. They could hear the plates sagging and distending, like the belly of a wind-broken horse, and below them the heavy waters soshed among the freight.

As they struggled to their feet tons of green water, which had smashed just aft the break of the fo'castle head, poured into the open hatch and the hole in the deck, filling the compartment knee deep, knocking the men in all directions. Through the sullen flood, dodging flying barrels, they rushed for the ladder and tumbled out of the black deathtrap like rats. Eleven had followed Nash into the hold. Ten came out. The captain saw this and he hurried for the hatch. But a cry of warning halted him. The shadow of a great comber was frowning over the bow and the Annandale was not rising to meet it even half way. As it toppled down ever so deliberately Nash followed his men to the ladder to the bridge deck. He was half way up the rungs when the comber came down with a roar of untold force and yet with a terrible, slimy grace. It bit out a section of the rail, caved in the front of the steel superstructure and poured into

(Continued on Page 170.)

The Month in Yachting

ADDISON G. HANAN, sailing his sloop Seneca, successful defender last season of the Canada Cup, in a series of races for the Manhasset Bay Yacht Club's Challenge Cup, now held by the American Yacht Club, insures several days of inspiring sport on the Sound next summer. The challenge for the trophy was made through the Indian Harbor Yacht Club, and indications are that the Manhasset Bay organization, and perhaps other clubs, will enter boats. If this be true, so much the better, but in any event the contest in public estimation will center on the struggle between Seneca and Mimosa III. At least, there seems no reason to believe that the Milton Point yachtsmen will not send the winner of the last Manhasset Cup series to the starting line.

She defended the prize handily in the last races in 1905 and since then no challenge for the cup had been issued, chiefly because of the fact that Mimosa III was regarded as invincible in her class. She rates in the old 33-foot class, 30.92 feet, and she is not obliged to suffer penalty for excessive draught, having been built prior to January 1, 1905. Seneca is rated in Class P and is 46 feet over all, 32 feet water line and carries 1,175 square feet of canvas.

At a recent meeting of the yachtsmen interested, the conditions of the race were changed so that the contest will be for 27-footers instead of 33-footers. This admits Seneca, as she rates right in this class. Mimosa will get in through a clause which admits any yacht which has ever raced for the Manhasset Cup. The new conditions will admit also the New York Yacht Club one-design 30-footers, rating, as they do, in Class P, 27 feet. The outlook now is that ten boats will be at the starting line when the series begins. Mimosa, on the face of things, should enter the race with no advantage over the Hanan boat. Seneca is bigger, despite her lower rating, and many believe she can beat the old Park sloop, boat for boat.

In any event, one might well say that with Addison G. Hanan sailing Seneca, the challenging club receives "a leg on the trophy" right at the outset; but, as old "Hank" Haff used to say, "We shall see." Trenor L. Park, who sailed Mimosa in 1905, died last fall and it will be difficult to find as good a man to take his place.

Naturally, it is a bit too early to discuss details, but when the time comes to formulate conditions, those so engaged would do well to bear in mind the system of scoring points, which has characterized the three series of races already held. Usually, when one boat completely outclasses another, the system is not especially involved either way; but with evenly matched sloops, results that, to say the least, are peculiar may well appear.

For instance, in 1904, when Mimosa—the old Mimosa—won the prize from the Manhasset Bay yachtsmen, she won but one race. Alert, A. H. and J. W. Alker's defender, won two races of the series of three. Yet the cup went with the Park boat. The reason for this was that under the scoring system each boat received a point for starting. She was awarded another point for every boat defeated. In the first race that year there were four starters. Mimosa won that race and received four points. Alert, which finished last, received only her one point for start. Alert won the next race, thereby bringing her points up to five. But Mimosa finished second and received, therefore, two points for beating two boats and one point for starting. The third race found only Mimosa and Alert at the line. Alert won, bringing her total of points to seven. But Mimosa, through her start, brought her total to eight and thus won the prize. Where a point system is capable of producing such a grotesque result as this, those whose business it is to frame the regulations for the next race should take precautions to avoid it. At all events, the suggestion is offered for what it is worth.

Addison G. Hanan, in addition to the Manhasset series, should win many cups and derive not a little pleasure from his sloop, which he purchased from the Rochester Yacht Club at the close of the Canada Cup series last year. The New York Yacht Club one-design 30-footers will rate in his class, and as these boats all have amateur skippers who, in point of ability, compare well with any Corinthian, the sport among these little fellows will be worth following.

Sir Thomas Lipton has again spoken. From the depths of his tea preserves in Colombo, Ceylon, word came that he would challenge for America's Cup under any conditions that the New York Yacht Club might devise. When everyone, or, that is to say, every person susceptible to the Lipton influence, had got properly excited, another despatch came, saying that while the size of the boat was no object, he retained his objection against the New York Yacht Club's stipulations. But, results—leaded type and black headlines announcing that the "genial baronet" was about to challenge again—were obtained. Now we are not one of those who maintain that Sir Thomas has engaged in his famous attempts to "lift" the cup purely in the interests of advertising his business, but there have been times, it must be admitted, when either through carelessness or bad management, conditions have afforded ground for such an argument. As a matter of truth, it may be stated that upon the success or failure on the Solent of Lipton's new sloop, Shamrock IV, next season will depend his further attitude in regard to the trophy won in the fifties by good old America.

SENECA, THE SUCCESSFUL DEFENDER OF THE CANADA'S CUP. SHE WILL RACE FOR THE MANHASSET BAY TROPHY NEXT SUMMER.

Good news comes from Michigan. A committee appointed by the Country Club of Detroit has been looking into the matter of forming an 18-foot class, to be built under the Uniform Rule, has reported in favor of the class that was so eminently successful on Lake Ontario last summer. Three or four boats will appear this year and it is likely that a cup will be offered for a series of races. Ontario yachtsmen are viewing the progress of this matter with interest, and in event of realization of present plans will send up some of their flyers to Lake Huron. The project is significant, chiefly because the 18-footers will comprise the first lake class built under the new rule.

When the Interlake Yacht Racing Association adopted the rule last season, it was merely an experiment, only a few clubs in the organization making use of it at all. At the annual regatta of the association at Put-in-Bay, there were special races for this 18-foot class, but with the type of yachts now in vogue on the Great Lakes. This

necessitated time handicaps, which caused much dissatisfaction among the sailors and owners.

If the rule is to be permanent, all of the new yachts must be built in accordance with it or be greatly handicapped when it comes to racing, and the Detroit Country Club has taken the initiative in building and trying out one of the classes which this rule produces.

The proposed 18-footers will be on the cutter type, with a 21-foot water line and 32 feet over all. The beam will be much narrower than in any of the yachts of the present time. The rule does not say whether or not they should be cabined and this point will be decided later on. They will draw about five feet of water and will be built with either a keel or centerboard, according to the decision of the committee as to which kind is the most preferable.

Chicago yachtsmen are now beginning to do what they should have done long ago, uniting in the common interest of encouraging yachting on that section of Lake Michigan contiguous to their city. A few weeks ago a joint meeting of several yacht clubs was held to discuss the best methods of promoting sailing and motor boat competition, and the latter part of this winter will see definite measures under way. There is no reason in the world why Chicago should not be as prominently identified with all that is big and good in the sport as any Atlantic coast city. The old objection of few harbors is fast disappearing. At the foot of the lake, Gary, Indiana, there is the great slip recently constructed by the Indiana Steel Company. It is 5,000 feet long and 200 feet wide and affords ideal shelter for yachts. Seven or eight miles northward we get another good harbor, Indiana Harbor, and then there are the harbors at South Chicago, Jackson Park, and the main harbor. The harbor at the South Shore Country Club will be dredged this spring, and a deep water haven at Lincoln Park should be ready to receive craft by summer. The Lake Bluff Naval Station anchorage completes the chain, which strikes one as being sufficiently adequate for any purposes, whether sporting or commercial. Out West last year, a Chicago yachtsman told me that when his brother sailors really became interested in the more significant ethics of the sport, when they began to hold definite ideas in regard to rating, when they became seriously interested in the development of craft along lines that accord with all that is sane, wholesome, then he would feel qualified to prophesy with utmost optimism in regard to the near future of the sport out there. This gentleman was fain to believe that he detected signs of such an awakening, and from my personal observation and from conversations with various yachtsmen, I am strongly inclined to agree with him. It is understood that the Chicago club members who have united for the good of the sport will suggest and further one-design classes, built under the Uniform Rule, and that the merits of the motor boat as a racer, as well as a cruiser, will be set forth in telling ways. All this is an alluring sign of the times out on Lake Michigan. A step in the right direction has been taken. More will follow.

In minor ways, racing yachtsmen, taken as a class, may be regarded as essentially self-centered in so far as the boats they either own or race are concerned. A smart craft inspires a certain loyalty peculiar to itself. Qualities of sentience are freely conceived. I have heard a clever yachtsman, otherwise normal, adjure his craft in the course of an exciting contest in much the same manner as jockeys are said to address their horses in the wrack and strain of the stretch. I have heard two gentlemen, who would scorn to quarrel over cards or any other game or sport in which they might be deeply interested, waxing wroth in a dispute over a point involving the relative merits of their yachts in a reckless fight for a windward berth, which in the way it was conducted by professional skippers might well have resulted in the sinking of one of the contesting boats.

And yet, when the good of the sport itself is at issue, the average run of sailing men are willing to sacrifice even their yachts, as an instance of which, behold the wide acceptance of the change in rating which legislated hundreds of dollars worth of hulls into the "back number" class. The fact that the New York Yacht Club seems inclined to prevent Reliance from being relegated into this category is merely a luminous case of an exception which goes to emphasize a rule. There is, indeed, dissatisfaction with the Uniform Rule as it now exists, but that it is better than the old rule few will deny, and being of this mind, even those of our prominent yachtsmen who are most deeply opposed to it are quite willing to see it through, and more, to spend money and time in building and racing during the process. This means more than might appear on the face of things. It means, for one thing, a sincere desire to obtain for American yachting all that is good and big and broad in the sport. It means, too, a general recognition on the part of yachtsmen that without a well-defined scheme, without, in short, codes of explicit, mandatory, comprehensive rules of design, measurement and sailing, yachting as a scientific sport meant for master minds becomes the game of illiterate beachcombers, shellbacks and schoolboys.

It is easy to talk of building boats and sailing races untrammeled by iron-bound stipulations, of racing boat for boat, a fat-bilged sloop against a single-sticker with a hull like a Dutch saucer and a keel like a spite fence, if the owners see fit—but it does not work out in the long run, or the short run either. And thinking yachtsmen out West, where much talk of this sort has been heard, will echo these sentiments in a jiffy if you care to question them as to their attitude in this regard.

THE OLD 33-FOOTERS. THE MANHASSET BAY CUP WAS FORMERLY OFFERED TO THIS CLASS, BUT WILL HEREAFTER BE SAILED FOR BY 27-FOOTERS.

The New York Yacht Club has disbanded the committee which it appointed some months ago to inquire into scantling restrictions and to suggest some feasible plan for adoption, in the face of the New England trend towards boats thus restricted. And perhaps the New York organization acted wisely. Certainly there seemed no reason why the committee should have been retained. But, going deeper, there unquestionably is some degree of merit in the scantling question.

The Exhaust

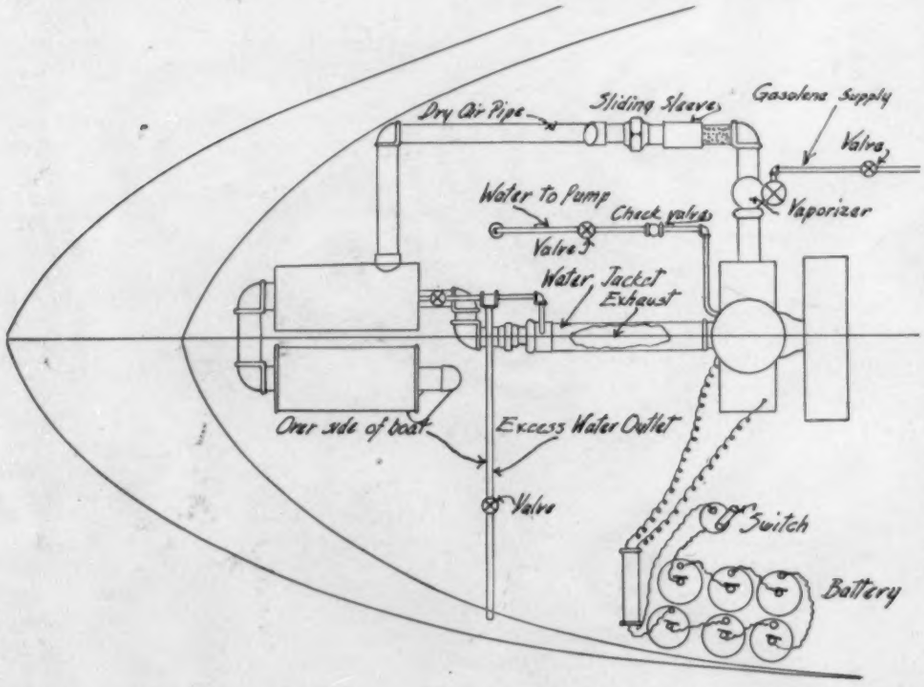
ABOVE vs. UNDER WATER

By E. T. KEYSER

Illustrations by courtesy of The Lozier Motor Company and The W. H. Mullins Company

THERE is a great deal of human nature in the exploded mixture that comes out of the exhaust port of a gasolene motor. It has done a lot of work and done it well, but, if left to itself, it will make so much noise about what it has accomplished that it must be sternly suppressed or the former diligent servant becomes a decided nuisance.

There are two ways of keeping this mixture in hand, so to speak, one by means of a muffler and the other through the under-water exhaust system. The first mufflers were simply large cylindrical tanks partly filled with pebbles, wire screens or transversely fitted perforated plates, which broke up the volume of the exhaust jet into tiny streams of gas. This resulted in causing less impact against the outer air than would have been the case had it emerged in the solid bulk in which it passed out of the exhaust port.



THIS DIAGRAM ILLUSTRATES A SYSTEM BY WHICH THE EXHAUST IS FIRST WATER-JACKETED, THEN COOLED BY INJECTION IN THE MUFFLER OF THE CIRCULATING WATER DISCHARGE. BOTH EXHAUST GAS AND WATER ARE THEN DISCHARGED UNDER WATER AT PORT SIDE AT BOTTOM OF HULL BELOW THE WATER LINE.

The gasolene motor is in reality a cannon, in which vapor takes the place of gunpowder. In the cannon, the gas generated by the burning of the powder pushes out the projectile; in the motor the gas generated by the explosion of the vapor of the combined air and gasolene pushes down the piston. The noise of the discharge of a firearm is caused by the impact of the gas upon the air at the muzzle of the arm, and the noise of the exhaust is caused by a similar impact of the spent gas in the air at the mouth of the exhaust pipe.

Under great pressure, gases and liquids assume some of the properties of solids—the stream of water from a hydraulic mining hose nozzle, for instance, will sing like metal when struck with an iron bar. Under the tremendous pressure of an explosion in either a gun barrel or the cylinder of a motor, the escaping gas impinges against the outer atmosphere with sufficient solidity and force to create a sound as loud as would two solid bodies striking together. Now to reduce this noise, it is necessary to reduce the impact, and this may be accomplished in either of two ways.

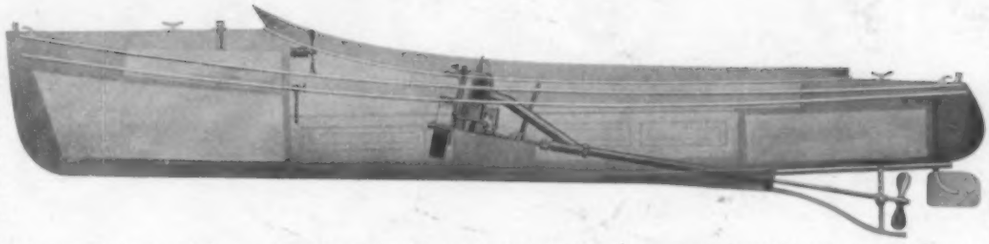
The first and the earliest method, was to reduce the solid volume of the discharged gas by breaking up its solid form and changing it into tiny jets, each too small to cause much atmospheric disturbance when emerging into the outer air. To secure this result, the exhaust pipe, a short distance from the port, was enlarged into a cylinder and this cylinder was partly filled with pebbles, wire gauze screens, or transverse circular perforated metal plates. The action and principle of all of these fillings was the same, i. e., breaking up and dividing the one large stream of gas as it came from the cylinder into many streams of small diameter and little force.

There were drawbacks to this method, however. The noise was considerably reduced, but some of the noise which would otherwise have been present at the mouth of the exhaust pipe, occurred inside the large breaking-up chamber or muffler, where the escaping gas struck against the baffle plates or their equivalents. Moreover, the resistance caused by the gas forcing its way past these obstacles caused the escaping gas to back up at the exhaust port, creating back pressure and thereby reducing the working power of the motor.

The second method of breaking the force of the exhaust gas was by expanding it in the muffler chamber and by giving it more room to exert pressure up, down and sideways, reducing its pressure at the mouth of the exhaust pipe. This would have served but ill to diminish the noise, but just as the outward force of the gas had been weakened through the equalization of its pressure in all directions, it came in contact with the water-chilled walls of the expansion chamber and was condensed and thus robbed of a very large percentage of remaining pressure.

The chilling was produced through water-jacketing the walls of the expansion chamber or muffler, which also served the purpose of keeping at a reasonable temperature what was once one of the hottest parts of a motor boat equipment.

Of late some engine builders have been bringing about the condensation of the gas in the muffler by means of a jet of water injected directly into it and voided through the exhaust pipe. The



AN UNDER-WATER EXHAUST SYSTEM, IN WHICH A JACKET SURROUNDING THE PROPELLER SHAFT TAKES THE EXHAUST GASES AND THE CIRCULATING DISCHARGE OUT UNDER THE STERN.

general principles of construction of muffler and exhaust piping, are that the former must be sufficiently strong to withstand a pressure of 175 pounds to the square inch in event of an explosion therein, and that from muffler to vent the piping should be larger than from cylinder to muffler. Moreover, as sharp turns in the direction of the exhaust piping tends to produce back pressure, angles of more than 45 degrees should be avoided. If it were not for the restrictions in the matter of angles, the proper installation of an exhaust system would be a far easier problem than it often is. As a matter of fact, the proper placing of the exhaust pipe and muffler is complicated when it does not govern the seating arrangements of small open power boats. With the motor in the bow, and separated from the cockpit by a bulkhead, the exhaust pipe may be brought out through the side planking at right angles to the shaft; with the motor in the stern, the muffler may be partly or entirely under the after deck and the discharge pipe run out at the stern; but when the motor is placed amidships the problem deepens. Setting the exhaust pipe athwartship means, in small craft, the blocking up of the passageway on one side of the engine and also spoiling some of the seating space, and this is the reason that in spite of the tendency of the craft to "squat" at the stern and the greater rake of the shaft, the freedom of the cockpit and the absence of a break in the side seats, render the installation of the motor in the extreme after part of the craft the most satisfactory arrangement on the average small launch using an above-water exhaust, if comfort instead of speed is the object aimed at.

When it comes to the final disposition of the exhaust gas, the boatman has two methods at his disposal. The first, the oldest and the most general in use, is the liberation of the gas directly into the air through a vent just above the water line in the side or stern of the boat. When the motor is aft, this method is preferable, as the occupants of the launch run directly away from noise and odor. With motor placed forward or amidships the side exit must be used. The drawback to the above-water exhaust is the noise, for no muffler has yet been devised for marine use which will entirely silence the escape of the spent gases.

For this reason, and also because it entirely eliminates the odor, many prefer the under-water exhaust. The drawback to this system is that under the most favorable conditions there is *some* back pressure, and in many cases, when the launch is standing still under reversing gear or propeller set neutral, or when going astern, this pressure is increased.

One of the first forms of installation of the under water exhaust system is that illustrated herewith. The water for cooling the motor comes up through a pipe which pierces the bottom of the boat, from which the pump puts it through the space between the cylinder and the water-jacket.

From jacket it flows through a water-jacket surrounding a short section of the exhaust pipe.

From here it is carried by piping of small diameter directly into the expansion chamber, from which, together with the exhaust gas, it is discharged overboard, below the water line.

In order that too much water may not be pumped into the expansion chamber, a supplementary water discharge pipe, to take care of an excess water supply, is joined at right angles to the water pipe leading into the expansion chamber. Both pipes are controlled by valves, so that the amount of water injected into the expansion chamber may be regulated to a nicety, or even, if circumstances make it desirable, shut off entirely, without retarding the flow from the pump through the water-jacket of the engine.

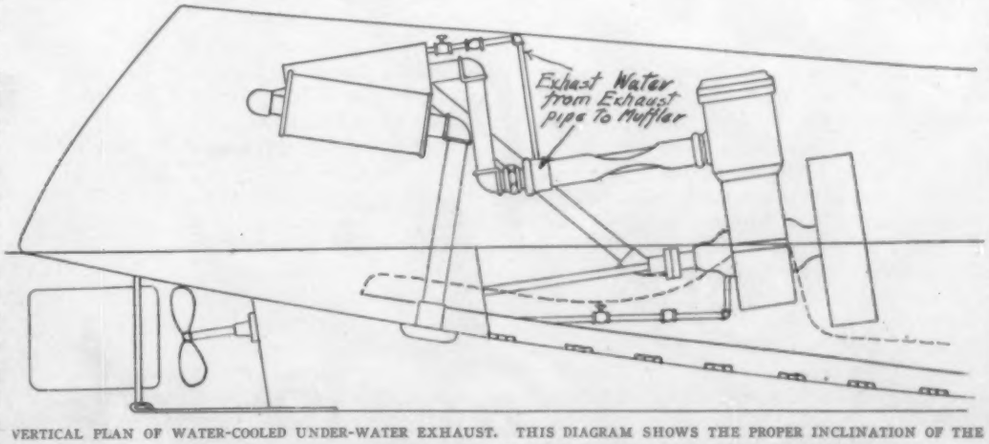
The vertical diagram of the installation shows that the discharge pipe and gas exhaust are both brought up above the water line level of the boat, a necessary precaution in an under-water system. It also shows how the two expansion chambers are inclined, so that the first drains into the second and the second outboard, so that there will be no chance of water backing up into the engine.

There are several devices by which the back pressure on the engine is reduced. One is built in the shape of a short "T" set at right angles to the exhaust vent, so that the water running through the short head of the "T" causes a vacuum in the exhaust pipe, drawing the exhaust gas out, on the same principle of that of a cologne atomizer. Another form of under-water exhaust is that in which the exhaust pipes from muffler or expansion chamber passes through a pipe encasing the propeller shaft and with a funnel vent at the after end, and into this pipe the water from the circulating system is discharged.

The diameter of the discharge pipe is much greater than that of the exhaust port, and the gas is fairly well condensed, as well as relieved from pressure, by the time that it reaches the vent. There is consequently but little back pressure as long as the launch is in motion forward; when going astern, a muffler cut-out to obviate any chance of back pressure would be desirable.

The very simplicity of this system makes it attractive.

The illustration of the system, which appears at the top of this page, does not show the expansion chamber, into which the exhaust gas first passes and which is attached to the starboard side of the cylinder.



VERTICAL PLAN OF WATER-COOLED UNDER-WATER EXHAUST. THIS DIAGRAM SHOWS THE PROPER INCLINATION OF THE MUFFLERS NECESSARY TO PREVENT THE DISCHARGE WATER REMAINING IN SAME.

"A GREAT SQUARE-RIGGER PASSED GRACEFULLY OVER A GOLDEN SEA."

Around the Horn—The Log of a Second Mate

By T. JENKINS HAINS

Continued—CHAPTER III.

SILVER SEA was a heavily sparred ship, her lower masts were hollow steel cylinders and on them she carried her lower topsails. The man who invented the double topsail did more to deserve the thanks of seafaring men than any other, perhaps, that ever lived.

In the old times, it was "reef topsails," whenever it came on to blow; it is still so on the few sailing men-of-war who have enough men to handle the great single topsails used on those ships. In a freezing gale, this is about the hardest and most dangerous work that the sailor is called upon to do.

With the double topsail of the merchantman, this is done away with almost entirely. The upper topsail is clewed down when it begins to blow too hard, leaving the lower, which is made of the heaviest canvas and iron-roped. The only time that the upper is reefed is when it is not blowing hard enough to steady the ship with the three lower ones.

The straining of a ship, loaded down almost to the decks as these are, is very great, and to one unused to the "dead" feeling that she has in a heavy seaway, she seems, from the crashing and groaning of the timbers, to be rapidly breaking up. In an old ship, this sometimes happens and the vessel is never heard from; but a new craft will stand an amount of twisting and straining that is astonishing. When laboring for weeks in the heavy seas off the Cape, I have watched the seams of the main hatch open almost a quarter of an inch at each plunge, yet the ship had only to be pumped out twice a day, making but one hour out of the twenty-four for this work.

One good thing about these large clipper ships is, that the quarters for the men are generally clean and well ventilated. There is no more crowding into a dark hole under the forecastle. The forward house, built onto the deck beams so that it cannot be washed off without carrying the deck along with it, is amply large for a fo'castle, a carpenter shop, a galley and a house for the small donkey-engine used for hoisting the cargo and sails. It is a well established fact, that if men get plenty of good water, light and air, there is little danger of scurvy.

In order to give an accurate account of a voyage, it is necessary to have recourse to a log-book. In it are noted the trifling events that make up the daily routine of the life on board the ship and which would, ordinarily, be considered useless to remember. Here are some extracts from my personal log:

October 23.—After a restless sleep, dreaming of pitching and tossing about, I awoke this morning just as the ship gave a tremendous lurch to leeward. As I gathered my senses, I was aware of a deep roar overhead and could hear the hoarse cries of the mate and men as they hurried from halyard to downhaul, shortening sail. Then came the old familiar bang at the door and "All hands, sir."

I quickly went on deck and found that we had been struck by a squall, just as the sun had risen out of the sea and disappeared into a heavy bank of clouds. It blew quite hard, and as we had all three topgallant sails set, it was "nip and tuck" whether we would get them in or not. Finally, by dint of good management, we secured all three.

The wind, however, held on, and soon the upper topsails were clewed down also. Then we reefed the mainsail and set it, and under the pressure we ragged along to the northward of east, with the wind from the southeast. It was a good thing to see the men lay out on the yard and put that reef in the mainsail. A trained man-of-war's crew could not have done it better, or quicker. As the morning advanced, the wind hauled to the eastward and became puffy, but it still blew a stiff gale of at least sixty miles an hour. The mercury fell slowly down the tube, as though it was going to drop out of the other end, and, as the clouds broke up a little, the sun made the weather look dirty

to windward. All to the southward was a steel-blue sky, whitening as it neared the water, and as the sun sent his rays slanting through it, it looked almost weird.

This is the season for dirty weather in the Gulf, and I expect we will have a fair specimen of it.

About ten o'clock the wind hauled so far to the eastward that we wore ship and stood away to the southward. Our position was about 800 miles to the eastward of New York and about two degrees to the southward of it.

Suddenly it fell calm, and heavy squalls were seen on all sides. The wind slanted to the southeast again and came with a dark oily looking squall, which lasted a few minutes. In a moment, slap went all three topsails against the masts and we were aback. Quickly as possible, the main and mizzen yards were brought around, and we were just swinging the fore, when whizz! bang! it came out of the southwest with a roar. How it blew! The water was as white and smooth as a china plate and in a few minutes we were flying through a plain of snowy foam. The wind came with such force, that it picked up the tops of the seas and blew them ahead like smoke, and it was impossible to stand above the rail without holding on.

Away we went on our course, dead before it, and, although the sea soon rose, we made good headway. In the afternoon we had to put a reefed foresail on her, to keep from being pooped by the seas running after us; and, as I write this, we are making good weather of it. We are heading across the stormy part of the Gulf Stream and after we cross this we will have better weather. It was the edge of a cyclone and we will run clear.

October 24.—All night the gale kept up. At two in the morning, finding sleep impossible, I went on deck. It was blowing harder than ever and the sea was getting heavier. The driving drift cut the face and burned the eyes greatly. Every sheet and halyard sung its song, and downhaul and clewline, shroud and backstay, added to the roar. A big sea pooped us towards morning and I thought that the mizzenmast had gone. The cabin was flooded and everything made as miserable as possible. About four in the morning the fore-tack parted and the foresail went all to the devil. The ship reels and staggers like a drunken man and it does not look well to see her disappear amidships in that smothering sea. At ten in the morning, a streak of blue sky showed in the westward, and in the afternoon it reached overhead.

By four in the afternoon the wind slacked up and before dark the sea began to go down, so that only now and then a big one would break over us. A man was standing by the weather main rigging, getting ready to cast off the weather topgallant clewline. The captain roared, "Look out!" and in an instant he disappeared under a cataract of blue water.

In a moment he appeared again, almost drowned, but holding on for his life.

October 25.—This morning dawned bright and clear, although there was still enough breeze blowing to send us, deep as we are, through the water at the rate of twelve and a half knots in the hour under topgallant sails. Heavy gulf clouds follow us and look greasy and full of water, and the sea is comfortable enough after what we have been through. At about ten o'clock in the morning a squally looking cloud rose rapidly on the quarter and the mate, standing near me, noticed it. I said, "You will just have time to take in your topgallant sails before it takes them in for you." However, he was in no hurry and the first thing he knew, it came. They let go the mizzen topgallant halyards by the run, when crack went the chain sheet of the sail and it was flying like a kite in the wind. "Hard up!" yelled the captain, coming on deck at a jump. Crack slatt, went the mizzen topsail, splitting in half and thundering away at a rate that threatened to take the mast out at any minute. In just two minutes it was all over, and the watch had time to go aloft and clear away the wreck. It was a narrow escape for the mizzen topmast and we came near seeing New York again in a couple of weeks.

At noon to-day we were in the latitude of the Azores and about half-way between them and the States. Towards dark the wind died down to a good breeze and the captain sat out on deck in my watch smoking. Some distance astern, a great square-rigger bound west passed gracefully over a golden sea.

October 26.—The wind is still fair and the ship is on her course to the eastward. To-day has been devoted to mending sails and patching up running gear worn out by the heavy weather. Away out here in the middle of the Atlantic Ocean, several gulls have come on board and fallen to the deck exhausted. It must have been heavy weather to drive them off so far. I tried to feed them, but it was of no use; they all died, though two of them the cat got hold of and started to eat alive. Having no strings for an old banjo on board, the third mate and myself managed to make some out of thread, so now there will be music in the air.

The food is not good at all, but whether it is the vitality of the two-year-old beef or some other cause, everyone is in the best of health and appears to be getting fat.

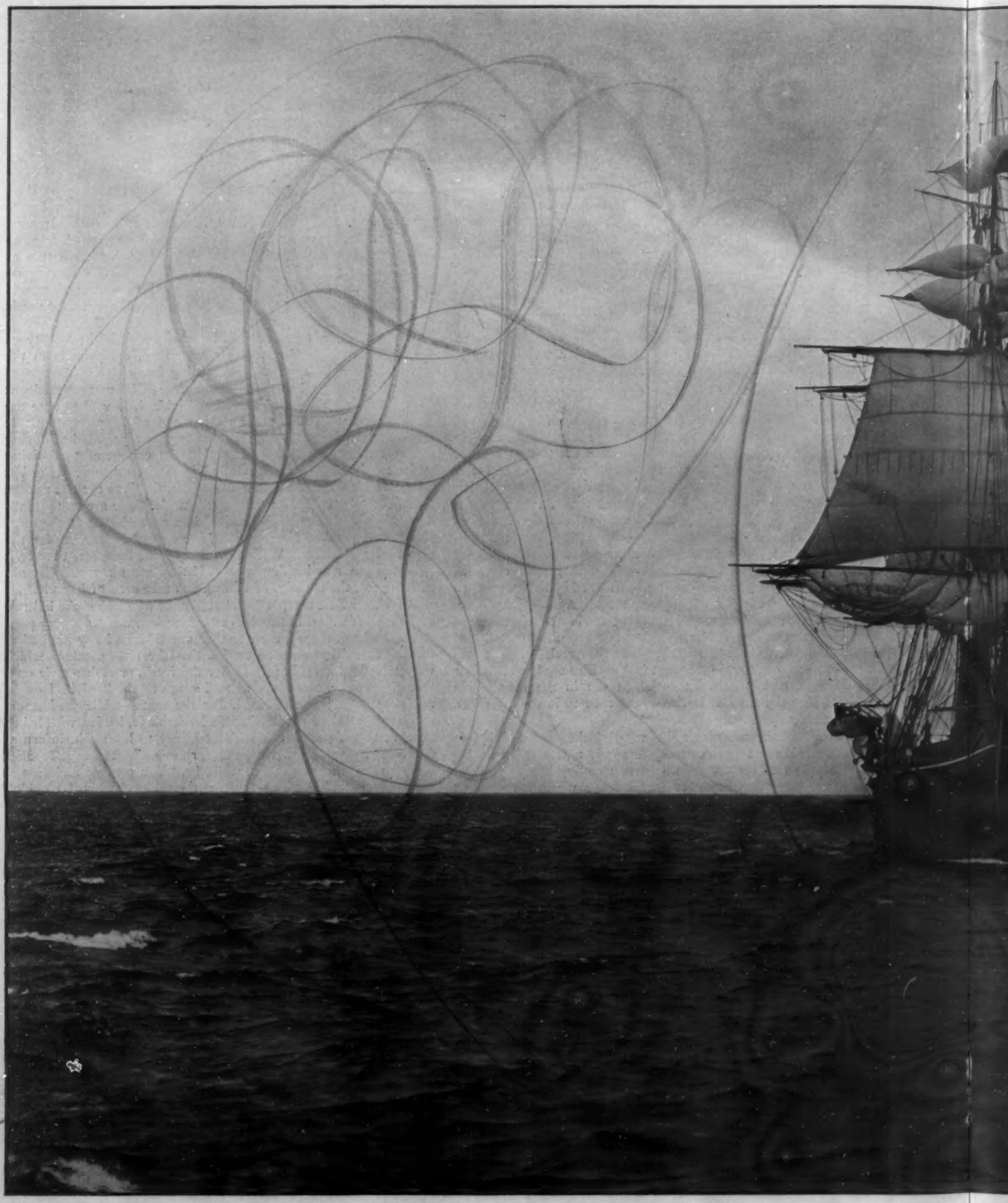
As sea voyages have been recommended by many prominent physicians, as a means of regaining health, it is well to note the changes in health that occur during one of long duration. It seems that all the good to be derived from a voyage is had during the first month or two. After that the confinement of living on board ship and the necessarily bad food tend to anything but a healthful existence to those whose constitutions are not robust.

In these later days of deep-water trade, there are many kinds of provisions that could be carried in a canned state if the companies that run the ships would have any consideration for the men that man them. With few exceptions, however, they look upon the sailor as legitimate prey, if they can screw a dollar out of him; and the captain, of course, can take care of himself.

On Silver Sea, our potatoes lasted until we reached the latitude of Juan Fernandez, in the South Pacific; but, besides a very poor grade of these, there were no other vegetables of any kind after the first fortnight out, except a few tins of canned potatoes, which were used by the cabin mess, after the fresh, or rather stale ones had given out. However, when I come to think of it, I ought not pose as a judge of food, for the mate—while performing the juggling act of swallowing his knife-blade, loaded with baked beans, and withdrawing it without injury to his tooth, informed me that, "I didn't know what good grub was." The captain, also, corroborated this statement. Said he, "You men go and dine at Delmonico's and think that you get good grub; but I wouldn't eat the d—— stuff. If you want to get a real good dinner, you'll have to go to some of the farm-houses down East. There's where you'll get something good to eat." After which he helped himself to a pound of baked beans, and from a bowl of melted ham fat poured a quarter of a pint of grease over them.

Beans, the eternal beans of the downeaster, are the staple food of the windjammer. They supply everything save nourishment. Indigestion, bad temper—and other things. Grease is the next article which in its way is probably the standard energy supplier. There is plenty of it in the old beef, plenty of it in the pork—in fact, nothing else, and it is not so hard to digest. I had not made any formal complaint against the food, either for the men or myself, but had suggested that as there was a case of condensed milk aboard we might have a tin now and then for the mess. I might just as well have asked for champagne and a roast bird. Yet, as I said, we were all getting fat and were in the best of health, and would have remained so for some time in that beautiful fresh air living upon a diet of shavings. The monotony was beginning to be felt, but always was that ever insistent feeling that there was something more coming.

(To be Continued.)



CLEWED UP.

UP.

Important Points in Motor Boat Management

By A. S. ATKINSON

THE improvements in the gas engine for motor boats have made their use for navigation both profitable and pleasant. The great gain is in reduced cost of operation, even when the engine is running, and the instant stopping of fuel consumption when the boat is at rest. As an illustration, the owner of a small steam freight boat carrying merchandise on the St. Lawrence River found that the cost of transporting light freight from the mainland to the different islands in the summer season averaged 3 cents a mile per hundred pounds. Last summer the boat was sold and a motor boat of 15 horsepower was put on the route. The cost of transportation was figured out at less than one cent per mile per hundred pounds. Similarly, a boat engaged in carrying fruit and farm produce on the Indian River, Florida, cut its cost down from four cents per mile to one and a half cents when a motor boat was installed in place of the old steam launch.

The motor boat for commercial purposes is ousting the steam craft everywhere. The lobster fishermen of New England, the river boatmen of Florida, the Mississippi and the Great Lakes, and the oystermen of the Chesapeake and Delaware Bays have almost entirely abandoned steam craft for motor boats.

Boatmen who formerly depended upon sail-boats for transporting light merchandise have taken to the motor boat and have found that the time saved in traveling makes up for the fuel consumed. Thus the small gasolene engine proves a formidable competitor with the wind-driven boat. The latter, of course, is the cheaper if time is not considered, but the delays more than counterbalance the consumption of fuel. This is particularly true of river boats, where the winding character of the streams makes sailing more uncertain.

As a pleasure craft, the motor boat has assumed a position in America which is little less than remarkable. Great as the sudden popularity of the automobile was, the motor boat has surpassed it in the length of time it has been in use. The small cost of a motor boat and the low expense of maintenance have placed this craft within the reach of almost everybody. Thousands who cannot hope to own an automobile can get a motor boat. When an expenditure of only a few hundred dollars stands between a man and his pleasure, he is pretty apt to find the means of gratifying it; but when these hundreds must be increased to thousands it is quite a different matter.

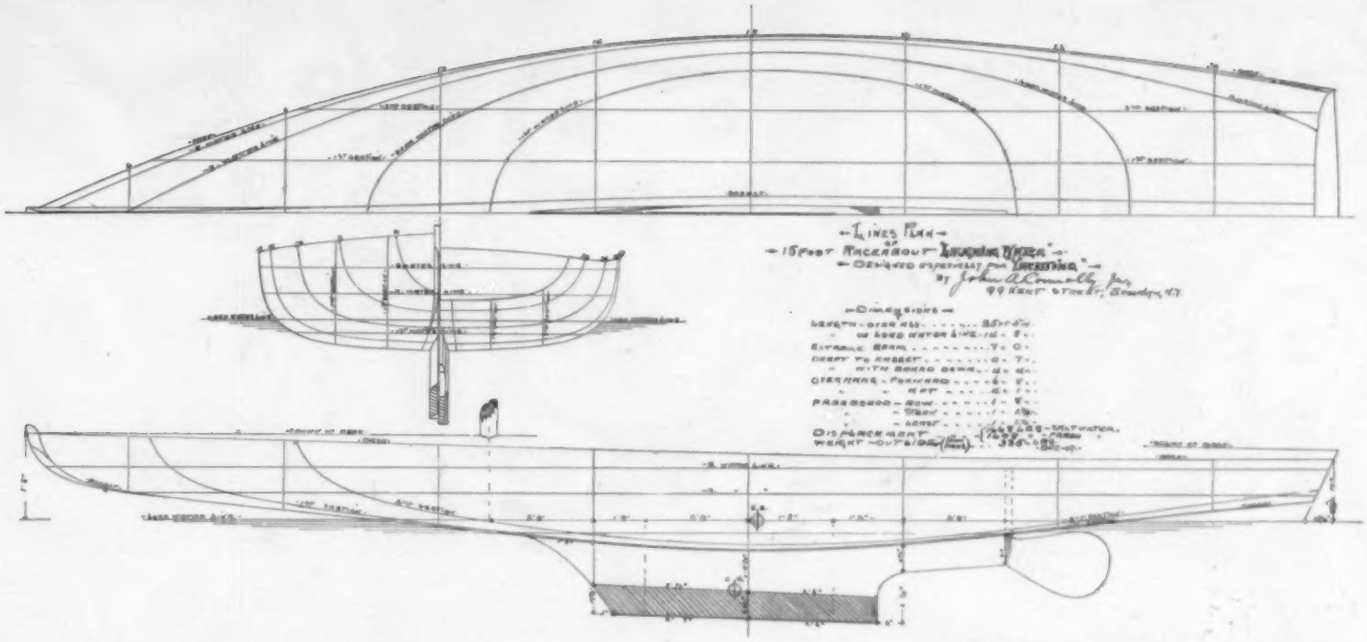
The motor boat owner is learning a lot about gasolene engines and their operation and construction. The very simplicity of the motor boat engine and its accessories induces the owner to study its principles. Nine-tenths of the owners of motor boats can operate their engines without the help of a mechanic or engineer, but nearly half the owners of automobiles employ chauffeurs, or at least mechanics, to keep the machine in order. This precludes the possibility of learning as much about the construction of the gasolene engine as should be the case. It is only by throwing responsibility on one that knowledge of a practical nature is obtained. It seems to be characteristic of the boatman that he likes to overhaul and tinker at his craft, but the average motorist on land dislikes to soil his hands and clothes with his car unless circumstances compel him. The man who has been accustomed to hauling out his yacht or sail-boat every year to scrape, paint and fix up, will in most cases spend nearly as much time in repairing his motor boat. It is this intimacy with the gasolene engine that is proving of such value to the whole industry. The more the average owner learns about his engines, the better it is for the whole trade. There is no secret to conceal from the owner in the modern gasolene engine. The constructive work which the ordinary operator accomplishes in handling his motor boat is frequently of more than local value. Indeed, several of the most important developments of the motor boat came directly as suggestions by the lay workers.

Columns have been written on batteries and electrical connections, but often they are so intricate that only an expert electrician could understand all the directions. The amateur wants to know the plain cause of the trouble, and wants it presented in a non-technical manner. In the ordinary motor boat for pleasure, dry batteries inclosed in pasteboard cylinders are used. These are easily replaced and can be bought almost anywhere. There are a few important points in connection with them. They must be kept free from water and also stored in such a way that they will not be too crowded. All electrical connections must be kept dry. This applies far more to the motor boat than to the automobile, for the reason that water is apt to fly around pretty freely in rough weather. A waterproof hood that will completely cover and protect every part of the electrical connection is essential for emergencies. The absence of it may cause trouble on any trip. One starts out in fair weather, but within an hour he may meet with rough seas or a drizzle. The writer has been greatly bothered even in dense fogs by the moisture collecting on the wires and preventing good sparking. For this reason, perfect protection of every part of the electrical equipment should be provided.

The glazed paper on the outside of the ordinary dry batteries is supposed to furnish protection from moisture, but frequently this gets moist and soft and if the batteries are stowed away in a damp, close place in the boat, the electric current will gradually ooze out. The batteries should be packed away in some dry compartment in the boat that is made waterproof and moistureproof by a lining of some good non-conducting material. Good thick glazed paper or pasteboard with a finished surface answers well, or sheets of asbestos can be utilized for the purpose. The batteries should never be placed close together. Separate each one by a thin partition of wood or rubber. A good method is to saw out of a board holes large enough to slip each battery in and tack a piece of rubber around the rim of each opening. In this way perfect insulation is obtained. The cover of the locker holding the batteries should be made waterproof by covering it with a piece of oilskin or rubber blanket. Tack this down permanently, so it will overlap joints and hang down several inches in front. In this way no spray can find its way into the compartment where the batteries are kept. Many a cruise has been spoilt through failure to keep the batteries perfectly dry and well insulated. Short-circuiting of the batteries must be prevented at all hazards.

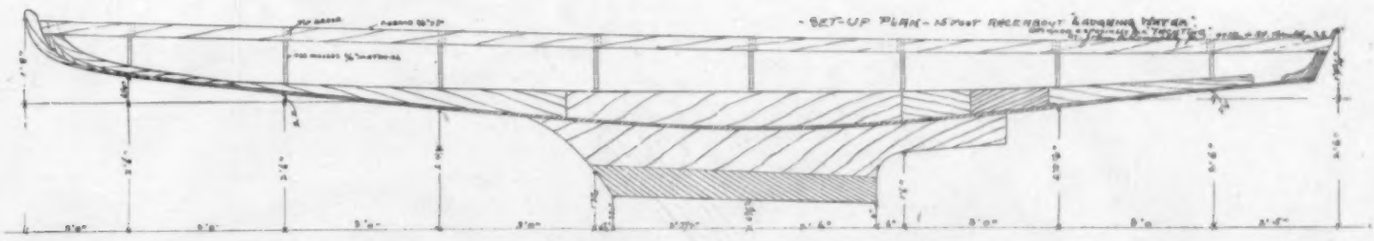
Another point is to keep the dead batteries culled out. They spoil one's calculation as to the amount of power on hand. Usually six cells of dry batteries or three cells of storage batteries are all that are needed, but reserve ones should always be carried. Some make a practice of putting in six batteries, and when the power gets weak replacing all of them with a new set. This is wasteful, for some of the old ones will be found to contain a good deal of electricity. A small pocket testing meter should always be carried, and before starting on a trip test each battery and if one is weak throw it out. The meter should not be held to the battery long, for it quickly draws a cell down and exhausts it. In using more than six dry batteries, a waste of good material is going on constantly. Sufficient power for good, steady ignition is necessary, but more than enough is waste.

All dry cells deteriorate in time, and if held long in stock lose more than half their power. In purchasing, always demand a test. If the seller has no testing meter, use your own.



NOTE—Stern to be braced on each side—up from floor. Height at bow given to top of planksheer.

NOTE—Stern to be braced on each side—up from floor. Height at stern given to top of deck.



How to Build a 15-Foot Raceabout

By JOHN A. CONNOLLY, JR.

Drawings by the Author

HERE are plans, specification and estimate of cost for building a 15-foot raceabout, suitable for one-design racing. If the prospective owner cares to be his own builder, the approximate cost of such a craft will be $150. A professional builder would charge about $350 for the same boat.

Following is a tabulation of the approximate material needed and its approximate cost.

Stem, 4 ft. 6 in. x 10 in. x 2½ in., oak or spruce	$0.65
Board Keel, 20 ft. x ⅝ in. x 8 in., oak	1.40
Deadwood, 9 ft. 6 in. x 4 in. x 1 ft. 4 in., spruce	2.50
Iron Keel, 335 lbs. of iron	10.00
Centerboard	1.00
Forward Backbone (1), 8 ft. x 9 in. x ¾ in., oak	.60
After Backbone (1), 8 ft. 3 in. x 9 in. x ¾ in., oak	.70
Trunk Sides (2), 6 ft. 6 in. x 9 in. x ¾ in., oak	1.00
Stern Transom, 5 ft. x 1 ft. 3 in. x 1 in., oak	.50
Clamps (2), 26 ft. x 3 in. x ¾ in., spruce	.75
Bilge Stringers (2), 26 ft. x 3 in. x ¾ in., spruce	.75
Sill (2), 17 ft. x 3 in. x ¾ in., oak or spruce	.40
Frames (1), Hackmatack Knee, 6 in. thick x 4 ft. long	2.00
Frames (2), oak boards, 10 ft. x 10 in. x ¾ in.	1.65
Floors, 5 ft. x 10 in. x 1 in., oak	.40
Knees, 10, of oak	1.25
Planking, 365 ft. (running), cedar	20.00
Topstreaks (2), 26 ft. x 6 in. x ⅝ in., oak	1.90
Garboards (2), 21 ft. x 8 in. x ⅝ in., oak	2.00
Planksheers (2), 26 ft. x 6 in. x ⅝ in., oak	1.90
Deck Beams (5), spruce boards, 7 ft. x 10 in. x ¾ in.	$1.75
Coaming, 14 ft. x 9 in. x ⅝ in., oak	.90
Cabin Sides, 10 ft. x 9 in. x ⅝ in., oak	.65
Cabin Beams and Roofing	1.50
Fastening, including rivets, bolts, etc.	7.50
Paint, varnish, etc.	8.00
Spars, Sails, Rigging, Blocks, etc.	60.00
Extra amount allowed	15.00
	$146.65

So it can be seen how small an amount of capital is really needed to build oneself a boat if he be a bit handy with tools and can follow instructions.

The specification of Laughing Water, a boat of this size and type is:

STEM.—To be of either a spruce or an oak knee, 2½ inches thick, or straight material, 10 inches wide, with a little crook in one end.

BOARD KEEL.—To be of ⅝ inch thick oak, 8 inches wide, in middle.

DEADWOOD.—To be of spruce, 4 inches thick, and moulded as in construction plan.

IRON KEEL.—To be cast and to weigh 335 lbs.

FORWARD BACKBONE, AFTER BACKBONE, TRUNK SIDES.—To be of ¾ inch oak, moulded as shown in construction plan.

FRAMES.—No. 2, 6, 10, 11, 12, 13, 14, 18, 22, 26 and 30 to be gotten out of a Hackmatack knee, 6 inches thick, frames in size being ¾ inch by 1½ inches, No. 18 being a double one. All other frames to be bent, size ⅝ inch x ¾ inch. Frames spaced 9 inches, center to center.

FLOORS.—To be of oak, ⅝ inch x 1½ inch. One on every other frame and at least 2 feet long. Oak knees to be fitted at No. 11, 12, 14, 16, 18, 20 and 22, in lieu of floors, and to have 9 inch lower arms.

KNEES.—To be used as shown in construction plan.

PLANKING.—Garboards, planksheers, and topstreaks to be of ⅝ inch oak. For widths of each see construction plan. Balance of planking, ⅝ inch cedar, in width 3 inches.

DECK BEAMS.—To be of spruce, ¾ inch by 1¼ inches. One on each frame.

DECKING.—King plank forward and aft, ⅝ inch oak. Balance of decking either white pine or cypress, ⅝ inch by 2 inches, laid in strips and blind fastened to beams. To be laid parallel with plankshеers, which are ⅝ inch oak.

CLAMPS.—To be of spruce, one on each side, 3 inches wide by ¾ inch thick, full length.

BILGE STRINGERS.—Same as clamps.

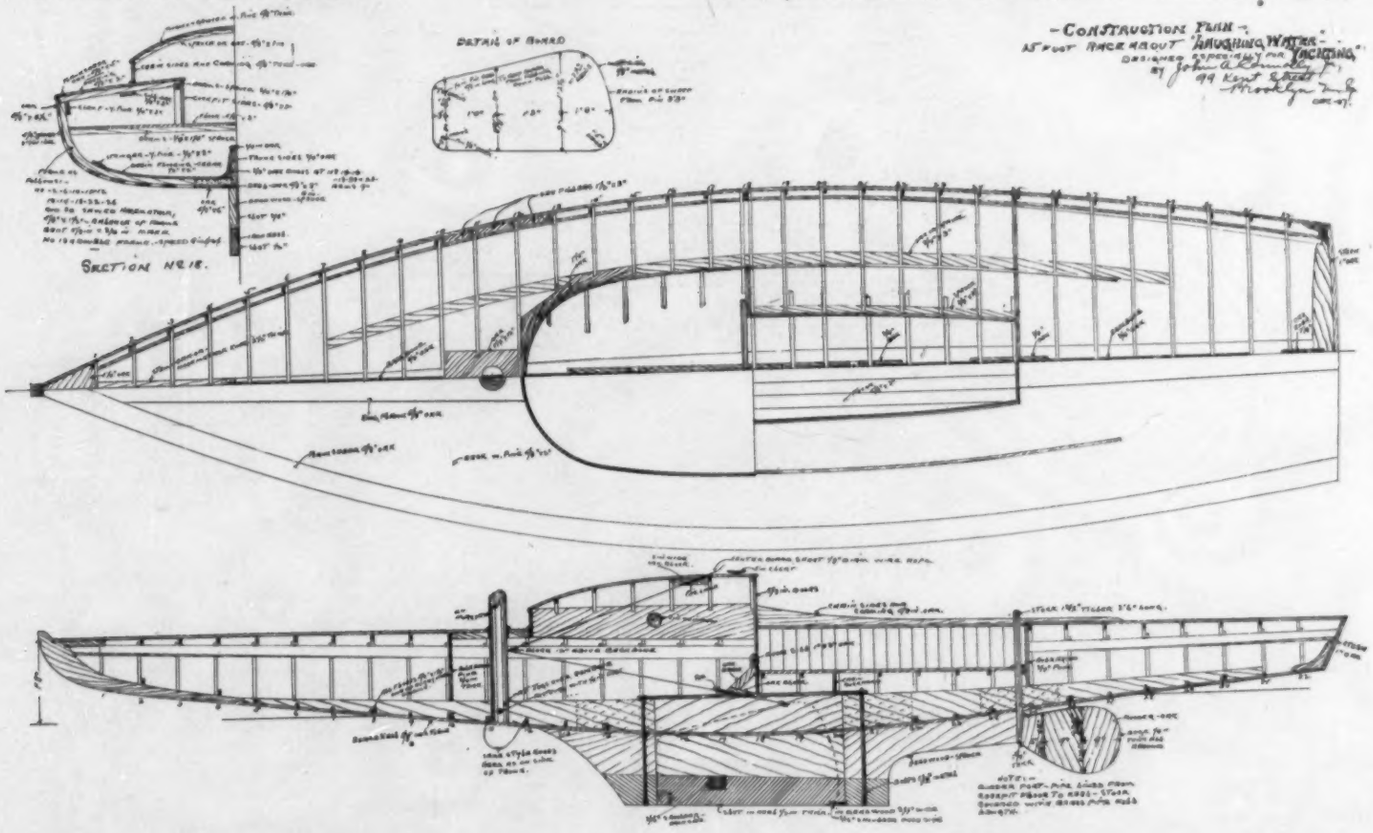
SILL.—To be of either oak or spruce, ¾ inch by 3 inches, running from No. 7 to No. 29, one on each side.

CABIN SIDES.—To be of ⅝ inch oak, and in depth from bottom of sill to 5 inches above deck at No. 18.

or white-leaded after. The deck to be planed off and caulked likewise with one strand of cotton and the seams payed with Jeffery's marine glue. The hull to be given two coats of white or black paint (as preferred) above the load water line and below two coats of a good anti-fouling paint. Top sides (topstreaks), plankshеers, deck cabin sides, coaming and spars, of course, to be finished bright. The cabin roofing can be finished bright also, or painted a dull but attractive color. Roofing can be reduced to ½ inch and laid in ½ inch by 2 inch strips, tongued and grooved and covered over with a good strong make (light) of canvas. If the following is done, I would advise the canvas being put on with Jeffery's No. 7 black glue, the canvas being laid in same and ironed over with a hot iron, after which it can be painted as before recommended.

LAYING THE LINES DOWN OF LAUGHING WATER.

Secure a floor space at least 30 feet long and not less than 9 feet wide. Sweep clean, and through center of this space run a line lengthwise. This will be your load water line, which is to act as your base line. Starting at the extreme left and about 2 feet in and 2 feet below load water line strike up a vertical line for the stem line. Measure 3 feet to the right of this and you will have line No. 1. Continue to measure 3 feet to the



CABIN BEAMS.—Spruce, ⅝ inch by 1 inch.

ROOFING.—White pine, cypress or cedar, ⅝ inch thick and tongued and grooved. If canvas-covered, reduce to ½ inch in thickness.

COAMING.—To be of oak, ⅝ inch thick, running in length from after end of cabin sides to 6 inches aft of No. 27.

AFTER END OF CABIN.—Cabin of summer style. No doors or bulkheads, but a canvas drop curtain to be used.

FASTENING.—Thorough throughout. Planking to be fastened to frames by copper rivets riveted over burrs or galvanized boat nails, clinched over on inside of frames. The rivets are recommended for the better job. All parts to be fastened together by screws or galvanized bolts, and the board keel especially to be thoroughly fastened to deadwood by 2 inch or 1½ inch brass or galvanized screws. The iron keel to be fastened to deadwood and board keel at No. 18 by a ½ inch jam-headed bolt, one on each side of slot. After backbones and trunk sides are in place, the forward and after iron keel bolts, as shown in construction plan, are to be put in place, passing through iron keel, deadwood board keel and backbones, these bolts being ½ inch in diameter and jam-headed.

IN GENERAL.—The hull of boat, after planking is finished, to be planed off smooth and the seams caulked with one strand of cotton and puttied

right until you have run in line No. 8. Then measure 2 feet 4 inches to the right of No. 8 and you will have your stern line. Next in order, run in two water lines above the load water line, the first 6 inches above and called the A water line and the other 6 inches above this and called the B water line. Below the load water line run in No. 1 water line, which is 3 inches below. At No. 5 you can lay out your body plan, using the vertical line as its center line. Take the measurements as given in the table of offsets and run in the respective lines. Remember that the measurements given are to the outside of plank and you will have to take off the thickness of plank in making the molds necessary to build with. For measurements of deadwood and iron keel, see Lines plan. As most of the amateur boat builders of to-day are familiar with the laying down process, it is unnecessary for me to go further into detail. Presuming that the same is accomplished, lay out the shape of the stem, board keel, backbones, trunk sides and stern, and make full-size patterns of all, including deadwood, iron keel, and all the molds necessary to build with.

Next in order set boat up according to Set-up plan, and after same is accomplished you are ready to proceed with the completion of your boat, giving careful attention to directions.

Note carefully the description of the different parts in the specification.

Having the stem, board keel, stern, deadwood and iron keel in the correct position, the next thing in order is to bend your frames in place. For this purpose, use the Hackmatack knee mentioned previously in list of material, also the two oak boards. Have knee sawed into seven pieces and each piece planed down to five-eighths of an inch in thickness.

Out of these pieces you can mold the necessary frames as specified. Have the oak boards dressed down to five-eighths of an inch also and sawed into ⅞ inch strips, the strips afterward to be dressed down to ¾ inch in thickness. Out of these strips, which you can cut into the necessary lengths, bend your frames as specified. After all the frames are in place, put in the floors as specified, fastening thoroughly to frames and board keel.

For bending your frames, a temporary steam-box can be rigged up. Use green oak for frames, steaming them from twenty to thirty minutes. It is presumed that, beside the deck ribband shown in Set-up plan you have put on three others on each side, fastening them thoroughly to your molds. For those who do not care to put in the sawed frames as specified, they can use bent frames throughout. This process will call for the molds as mentioned, otherwise molds will not be necessary, as the sawed frames will answer this purpose instead.

GENERAL TYPE OF 15-FOOT RACEABOUT THAT CAN BE BUILT FROM THE ACCOMPANYING INSTRUCTIONS.

Put on the garboards and topstreaks first, after which put on the balance of planking, making the shutter or last plank come about on the turn of the bilge. Fasten all planking thoroughly to the frames, counter-sinking heads of fastening to allow of puttying. For those who prefer it, double planking can be used, making inner and outer planking ¼ inch thick, or the outer planking ⅜ inch thick. After the ¼ inch plank is put on a layer of canvas, laid in Jeffery's No. 7 black glue, ironing canvas out flat all over with a hot iron, after which you can cover outer face of canvas with another coating of Jeffery's No. 7 black glue, before putting on outside planking. These planks can be tacked in place, after which both can be rivetted to frames.

For your deck beams, use the five spruce boards specified. Before putting in beams, remove molds and work in your clamps and bilge stringers, also forward and after backbone and trunk sides, jogging backbones over top of heels of frames and floors. Alongside of trunk, box the frames in. Fasten backbones and trunk sides thoroughly to board keel by using brass or galvanized screws 2 inches long, at 8 inch intervals.

After the beams have been put in place, one at each frame, put in sill on each side, as shown in construction plan, after which lay your deck as specified. Put in cabin sides and coaming next. On top of frames, along each side of trunk, lay a cedar flooring. A bulkhead can be placed on forward side of frame No. 20, to act as end of interior cabin. The cockpit floor can be put in as shown, and the trunk capped on top and the hauling arrangement for centerboard inserted.

For those who do not care to lay boat down, blue prints and full-sized building patterns can be procured from the designer at a reasonable figure.

A young man starting to build a boat of this description will find when it is finished that he has in his possession at nominal cost a sloop in which, if he is anything at all of a sailor, will win cups for him against boats of more famous pedigree. It will be a craft which can take her share of weather and at the same time scud along in the faintest sort of a breeze.

A class of these boats would make interesting racing for any crowd of small boat yachtsmen. Say a group of three or four, or even half a dozen young men should take these working patterns right away and start to work building boats for the coming season. There can be no question that every builder would benefit from the experiences of others as the work progressed and the chances for mistakes—which cannot be made save through carelessness—would be eliminated.

I have never heard of a "home-made" class of racers, but there is no reason why one should not exist, and many reasons why it should. The great cry against the racing of yachts is that the game is expensive and that it requires the pocket book of a man occupying a fairly remunerative business position—certainly not a school boy.

This, of course, is far from the case. A high-priced class of boats, or a class of raceabouts beyond the means of the young sailor, can afford excitement not one whit more absorbing than a class for which no eminent designer of world-wide fame laid down the designs. All that is necessary is that the young skipper be possessed of average ability and that his rivals are no less qualified. After all, it is the human element in a yacht race which more often than not decides where cups go.

TABLE OF OFFSETS OF A 15-FOOT RACEABOUT

MEASUREMENTS GIVEN IN FEET, INCHES AND EIGHTHS.

	STEM	2	6	10	14	18	22	26	30	STERN
Deck	0.1.2	0.10.1	1.11.2	2.9.2	3.3.4	3.6.0	3.5.5	3.2.7	2.10.2	2.6.0
B. Water Line		0.8.0	1.9.6	2.8.3	3.3.0	3.5.6	3.5.1	3.2.2	2.9.1	2.4.5
A. Water Line			1.5.4	2.6.0	3.1.6	3.5.0	3.4.0	3.0.0	2.4.0	1.4.4
Load Water Line				1.8.4	2.9.2	3.2.0	3.0.0	2.3.1		
First Water Line					2.2.4	2.9.5	2.6.2			
Heel	0.1.2	0.1.2	0.1.3	0.2.2	0.3.3	0.4.0	0.3.7	0.3.3	0.3.0	0.3.0

SHEER—MEASURED ABOVE LOAD WATER LINE.

STEM	2	6	10	14	18	22	26	30	STERN
1.8.0	1.7.3	1.6.2	1.5.2	1.4.2	1.3.2	1.2.5	1.2.0	1.2.3	1.2.6

RABBET MEASURED ABOVE AND BELOW LOAD WATER LINE.

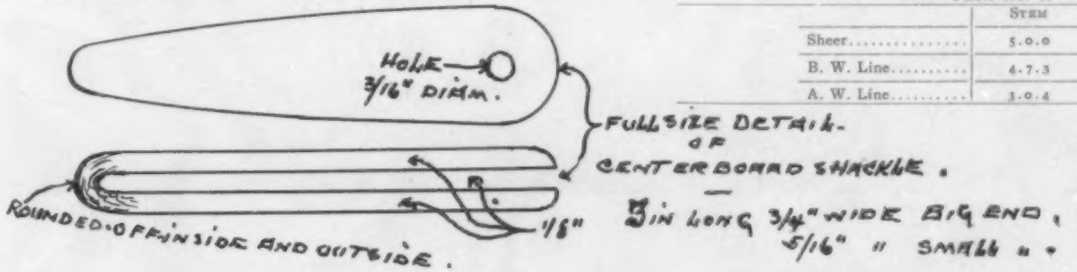
STEM	2	6	10	14	18	22	26	30	STERN
0	0.6.1 ABOVE	6.2.1 ABOVE	0.2.6 BELOW	0.5.2 BELOW	0.7.0 BELOW	0.5.5 BELOW	0.1.7 BELOW	0.2.2 ABOVE	0.4.6 ABOVE

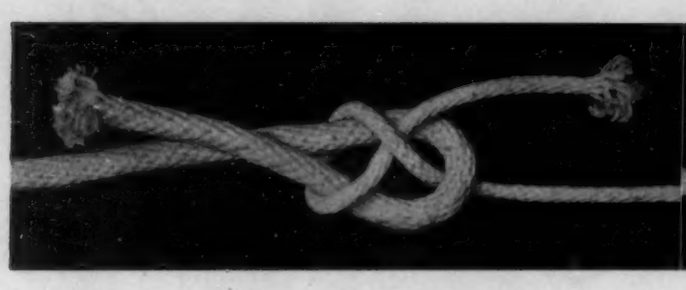
OUTSIDE OF STEM, AND RABBET MEASURED FORWARD FROM NO. 6.

	STEM	RABBET
Sheer	5.0.0	4.9.0
B. W. Line	4.7.3	4.4.4
A. W. Line	3.0.4	2.10.0

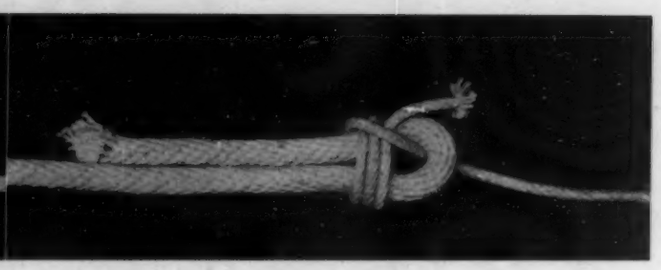
NOTES: For deadwood and keel measurements, also rake of stern transom, see lines plan. Measurements given, above for stern are for a plumb stern.

Sections 3 feet apart. Water lines apart 6 inches above and 3 inches below load water line.


HOLE 3/16" DIAM.
FULLSIZE DETAIL OF CENTERBOARD SHACKLE.
3 IN LONG 3/4" WIDE BIG END, 5/16" " SMALL " "
1/8"
ROUNDED OFF INSIDE AND OUTSIDE.



XI. SHEET BEND. USED FOR MAKING FAST A SMALL LINE TO A LARGE ROPE. A STRAIN UPON THE SMALL ROPE CLOSES THE ROPES TOGETHER AND MAKES THE KNOT MORE SECURE.



XII. SIMILAR IN PRINCIPLE TO THE SHEET BEND, BUT A GREATER NUMBER OF TURNS IN THE SMALLER ROPE OVERCOMES THE STIFFNESS OF THE LARGER.

The Knots in Common Use—Part II

By WILLIAM E. PARTRIDGE

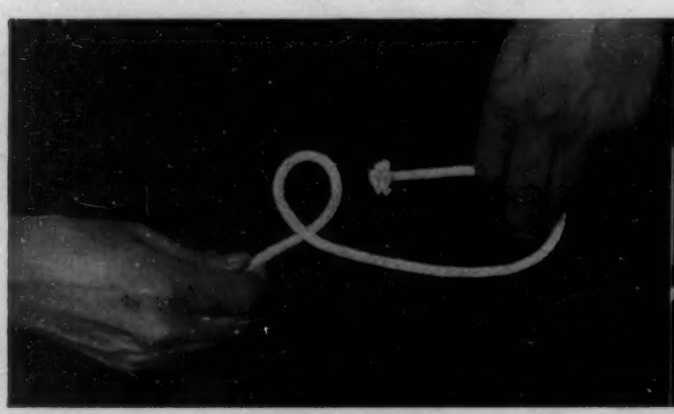
Photographs by Edwin Levick

THE reef or square knot has some disadvantages and is not suitable under all circumstances. In a hard, smooth rope like new braided cotton it refuses to close and the parts slip past each other. This also happens when tying a small line to a large rope. The reef knot is not adapted for joining large ropes unless a block of wood is placed in the knot to give the turns support. Otherwise the turns do not come together closely enough to have any friction and, of course, all holding power is lost. Figure X shows the peculiar form which the square knot takes when an attempt has been made to tie a small line to a large rope and the larger one has straightened out. This is sure to happen when the larger rope is stiff and a strain is put upon the knot. When ropes have to be joined in this fashion, a larger one to a smaller, a modified form of the reef knot is used, called the sheet or Becket bend. How this is made is shown in Figure XI. It will be seen that the end of the small line, instead of coming back alongside of its own rope, is tucked under. In this way a strain is brought upon the loop of the small rope, which not only prevents the larger one from straightening, but draws its parts together. In Figure XII is another form of this knot. In this case a number of turns of the small line are necessary to overcome the stiffness of the larger rope and produce sufficient friction to hold the parts together. This is called a sheet or Becket bend double.

X. REEF KNOT. A LARGE AND SMALL ROPE TIED TOGETHER. UNDER STRAIN THE LARGE ROPE STRAIGHTENS, WITH THE RESULT SHOWN.

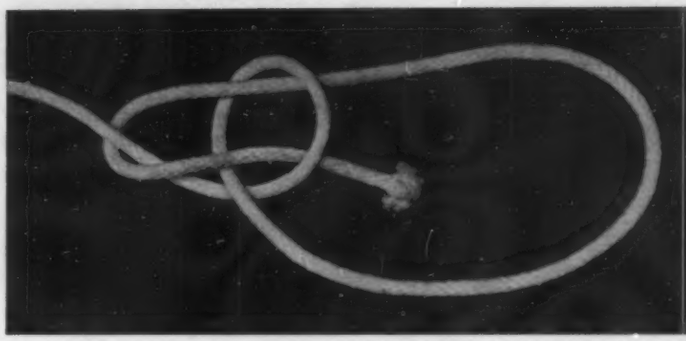
The clove hitch and the reef knot have the peculiar advantage that they can put a strain upon the lines in which they are tied. This cannot be done with the sheet bend, although it so closely resembles the reef knot. There is no knot more generally useful than the bowline. Although it cannot be tied while a strain is put upon the ropes to be joined, yet it can be used in numberless situations when nothing else will answer as well. It will fasten a small rope to a large one, and it can make one rope fast to the central portion of another with no danger of slipping. It is the knot used in net making. The amateur "when in doubt" is fairly safe in making a bowline. Like the square knot, it is perfectly secure, and possibly in stiff ropes even more so. The usual illustration shows it forming a loop in the end of a rope. In Figure XIII we have the bowline begun. The end at the right is passed up through the loop or "bight," then down and under the main, or standing part of the rope. The end is then brought back as in Figure XIV and passed down through the loop. The completed turns are shown in Figure XV. It would make no difference if the large loop on the right were cut; all three ropes then leading from the knot would bear a strain equally well. In Figure XVI the bowline is shown drawn taut.

The ropes used in illustrating this article are all of braided cotton, so that the scores of twisted rope will not confuse the photographs, as is commonly the case where Manila is used for illustrating the formation of knots. The roundness of the cotton rope and its light color render it an ideal material for illustration.

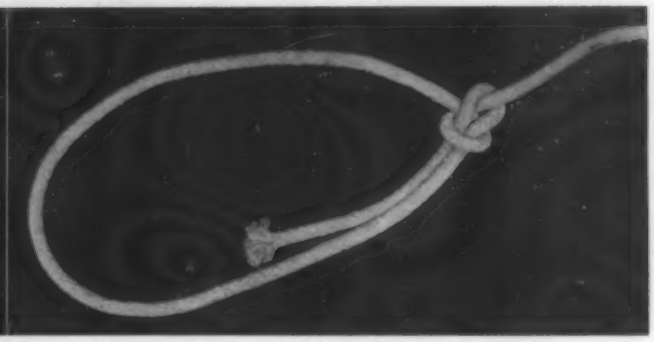


XIII. A BOWLINE BEGUN. THE FIRST STEP IN MAKING A BOWLINE KNOT IS TO MAKE A "BIGHT" (LOOP), THROUGH WHICH THE END IS PASSED.

XIV. SECOND STEP IN MAKING A BOWLINE. THE END HAS BEEN PASSED UP THROUGH THE LOOP, UNDER THE MAIN PART OF THE ROPE, AND IS GOING BACK DOWN THROUGH THE BIGHT.



XV.—THE BOWLINE COMPLETED. KNOT LEFT OPEN TO SHOW HOW THE TURNS ARE MADE.



XVI. BOWLINE PULLED TAUT. THIS SHOWS THE KNOT IN ITS COMPLETED FORM.

It is necessary for the sailor not only to be able to make any knot with the rope before him on the deck, but he must be so familiar with its turns that he can tie it under all sorts of conditions. Knots have to be tied in the dark, in places where he can not see his hands, and not infrequently when only one hand can be used. He may have to make a clove hitch with one hand while holding on for dear life with the other, illustrating the old saying among sailors of "One hand for myself and one for my owners."

We are indebted to The Marine Manufacturing and Supply Co. of New York, for materials used in illustrating this article, also to The D. Van Nostrand Co., New York, publishers of nautical and scientific books, for valuable assistance.

English Yachting

London, January 23, 1908

ALTHOUGH the severity of the winter, so far, is enough to drive all thoughts of seafaring out of yachtsmen's heads, there is a good deal of talk in Solent towns about the coming season. Apparently there is to be much first class racing in British waters, and in a large part of it our friends the French, and our cousins the Germans, not to mention our remoter blood relatives in Denmark and Sweden, are expected to take a part. It does not do, of course, to believe all the optimistic forecasts one hears. Every year, in fact, is always to be the greatest in the history of the pastime, when the estimate is made about Christmas, and nobody seems to be dreadfully disappointed when May comes, and there is not a sign of fulfilment of the promise. Still for next year, I think it may truthfully be foretold that in the two big classes—the fifteen metre class and the twenty-three metre class—the sport will be much more interesting than it has been for many seasons. There is Sir Thomas Lipton's new Shamrock in the larger group, with last year's White Heather II and last year's Brynhild II. I think we may now count out Nyria, which ought, on form, to be relegated to the handicap division. In the smaller class, there are to be at any rate two new boats, so that the sport in this division will be quite as well worth following as it has been in any recent year.

No yachts of less rating than this go round the coast, so that although there are to be several new twelve-metre boats on the Clyde, and a proposed new one-design class of six-tonners on the Solent, the prospect is really to be judged by the promise I have indicated. At the different centers from Harwich right round to Gourock the smaller fry of class boats and one-design boats are really the backbone of the season, admittedly, though in the larger outlook, they do not count at all. Still, they are not to be ignored in any forecast of a yachting year. Personally, of course, I do not care a straw whether the activity in this particular department of the pastime waxes or wanes, because I think that if a man wants a yacht to race in, he ought to have a racing yacht. I would as soon think of going hunting on our Dirstman's Shire horse as of going racing in one of these marvellously "healthy" yachts in which you have the alleged headroom, and all the other comforts of the Carlton-Ritz. If, too, signs are to be relied upon, the handicap racer is not really much in love with seafaring. There is a decided leaning on his part toward the auxiliary motor boat. He is, in fact, putting motors into his boats all round the coast, not out of any desire, mark you, to encourage engineering, or to increase the speed of his boat, but merely in order to motor his way into some convenient haven when night falls upon the water, and there is not a breath of wind. To my mind that is not yachting, and I have too many marine motoring friends to permit of my calling it motoring. Still, it is a sign of the times which I am bound to mention, though, as I say, I am not deeply concerned in what happens to the people who race handicap boats.

Not very long ago, one could read in every British newspaper that the new International Rating Rule was calculated to produce a "healthy" kind of yacht. No search warrant is necessary to discover my views on the subject, so that I need not worry readers with a recital of them. Every rule that I have known has been scientifically calculated to produce a "healthy" type of boat, and yet very few racing yachts have ever been generally admitted to be healthy. Tersely expressed, the explanation of this is probably that the average man does not know what he wants, and is invariably attracted by the newest idea. The designer is the man that counts in these things, and if anybody ought to be blamed for the "unhealthiness" of a particular type of racing yacht, he is the one, for not only is he largely responsible for the rule itself, but he is the first to endeavor to defeat its object. For instance, I hear from the North that the new Shamrock is to have more lead, and consequently a greater sail-spread than White Heather II. Further, it is said that the new fifteen-metre boats are to be nearer 80 feet in over all length than the 65 feet which was regarded as reasonable. In the second year, that is to say, of the rule, that was to produce "healthy" boats we are back to the big over all boat. I do not dislike the big over all boat, nor have I any objection to lots of lead or clouds of canvas. But after all the talk there was last year about shorter ends and reasonable dimensions over all, I am surprised at this development. The wish is father to the thought, no doubt, that such a boat will prove superior to White Heather II, but a good deal will, obviously, depend on the weather. Shamrock IV is evidently to be a light weather boat, and it is inconceivable, therefore, that in any weight of wind, she will beat White Heather II. Still, I am open to conviction on the point, and in case my contention is that the production of boats of this type under the International Rule gives away all the arguments which have been urged in favor of it.

Even at this time of day it is the easiest thing imaginable to get up an argument on the question of lightness in yacht construction. Your people are, of course, alleged to be the chief delinquents in the overdoing of lightness, and to say "Herreshoff" to some people here has much the same effect upon them as the sight of a red rag would have on a bull. I was talking with a well-known naval architect the other day on this very subject, and his trouble seemed to be that somebody had alleged that he was not so clever in keeping down weights as Mr. Herreshoff. To use a London street boy's expression, this was no "dud" shipbuilder; he was, and is, "the real thing." He has built several challengers and a number of British first-class racing yachts from the designs of more than one eminent artist in naval architecture. His view was that in none of the Herreshoff yachts that had sailed for the America Cup was the lightening of the yacht structure sufficient appreciably to enhance the value of any other quality. He took a pencil, and he figured out the actual savings in weight accomplished by Mr. Herreshoff in the case of his biggest boat, and the total amounted to no more than 10 cwt.

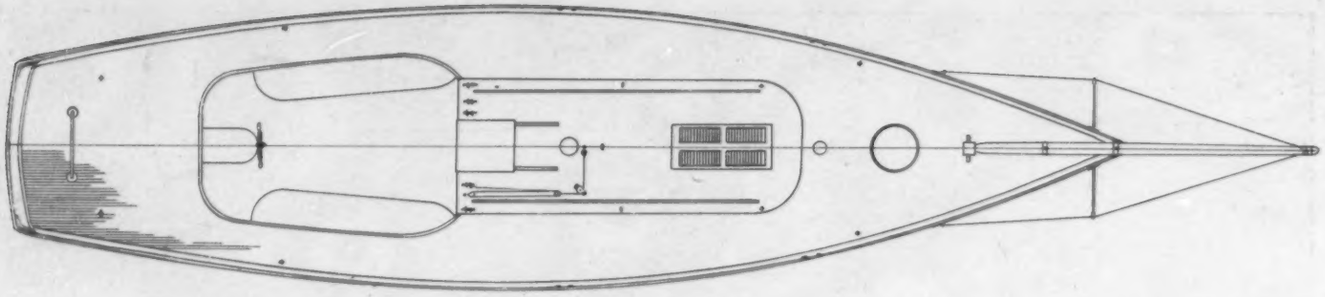
"Now," he asked, "how much more canvas could you spread on an addition of 10 cwt. to your lead?"

"Well," said I, dodging the question, "how do you account for the greater speed of the Hereshoff boats?"

"It is," he said, without any hesitation, "in the design."

That is of course my own view. Another view of mine which he confirmed was that Reliance was, if anything, more capable of Atlantic voyaging than any of our challengers of recent years. Coming from a man who really knows something about the business, this is interesting testimony and I mention it merely to show that we are not all of the opinion here that we have invariably been beaten by conditions in races for the America Cup.

Come over here to the Clyde or Solent some time—we are beginning to forget what an American racing yacht looks like. ROBERT MACINTYRE.



A 30-Foot Water-Line Schooner

A HANDSOME little craft is the schooner designed by Atkin-Wheeler of Halesite, L. I., for W. Wilton Wood, Jr. She is 50 ft. in length over all, 30 ft. on the water line, 12 ft. 6 in. in beam and draws 5 ft. of water. She has 5 ft. 8 in. head room in her cabin under the trunk. Her sail area is 1,219 sq. ft.; distributed as follows: Mainsail, 731 sq. ft.; foresail, 211 sq. ft.; forestaysail, 109 sq. ft.; jib, 168 sq. ft.

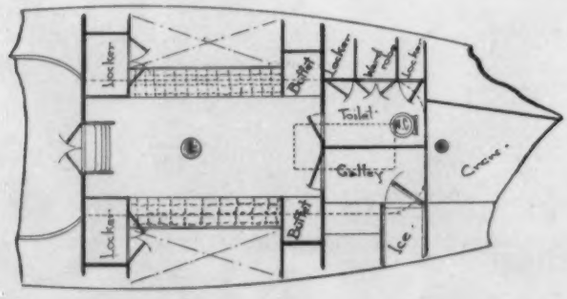
The boat is lead ballasted and the keel and frame are of elm and yellow pine. The planking is of cedar, the decks of spruce, coamings and house of mahogany. The cabin interior is finished in eggshell white and mahogany. Outside of hull is of bright finish, with gold scrolls.

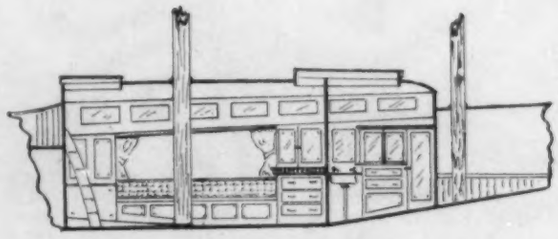
She has a fairly large cockpit, with seats on each side and steering wheel and box a trifle forward of the after cockpit coaming. Her deck-house is entered by a central companionway hatch. On the forward end of this house and ventilating both cabin and galley, is a ventilating hatch. A round deck hatch between the foremast and the bowsprit bitts, as shown in deck plan above, leads into the forecastle.

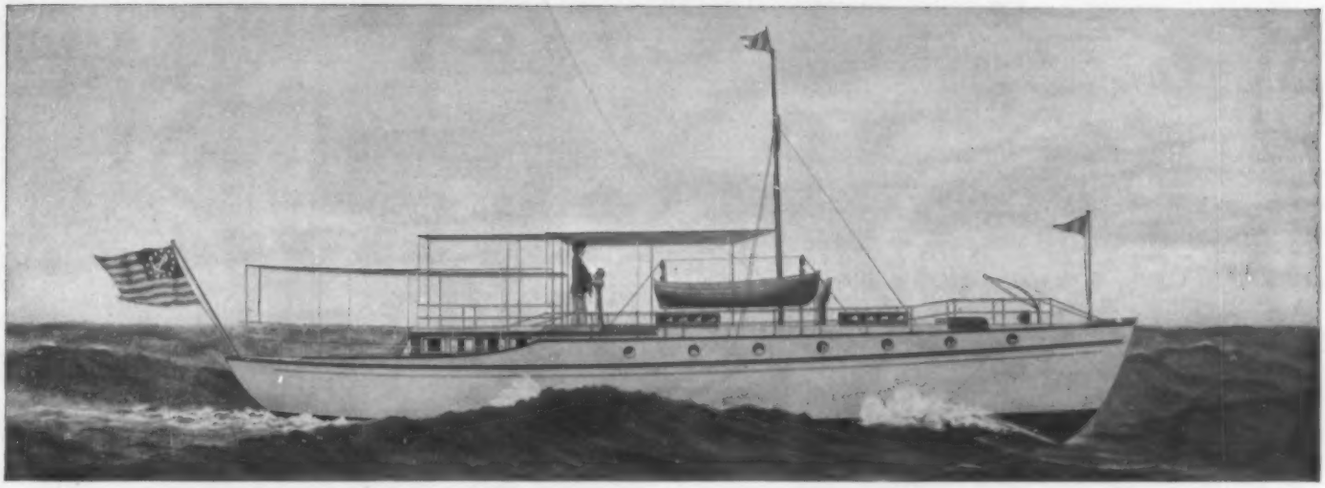
A companionway staircase of four steps leads from the cockpit into the saloon of the main cabin. On each side of this, under the deck, is a berth with a sofa in front. At the after end of each side of the saloon is a locker, entered by doors over the berth. At the forward end, on each side, is a buffet. Forward of the saloon and between it and the crew's quarters is a galley on the starboard side, with stove space and ice-chest. On the port side is a toilet room, with a yacht water closet, two lockers and a wardrobe. A crew of two can be accommodated forward.

Instead of the regulation portholes, oblong windows with drop sashes are placed in the sides of the cabin trunk.

The centerboard, which houses in the keel below the water line, gives the full space of the boat's cabin for accommodations. The long overhang at bow and stern gives her a great deal of deck room on a very moderate water line length, and both trunk and cockpit are so arranged as to provide the necessary head room below and plenty of room for navigating above deck without unduly cutting up the deck space.



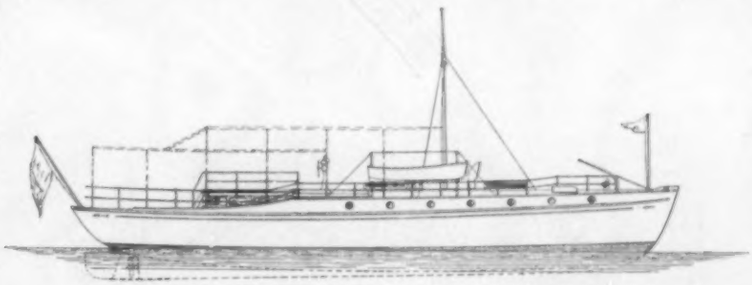




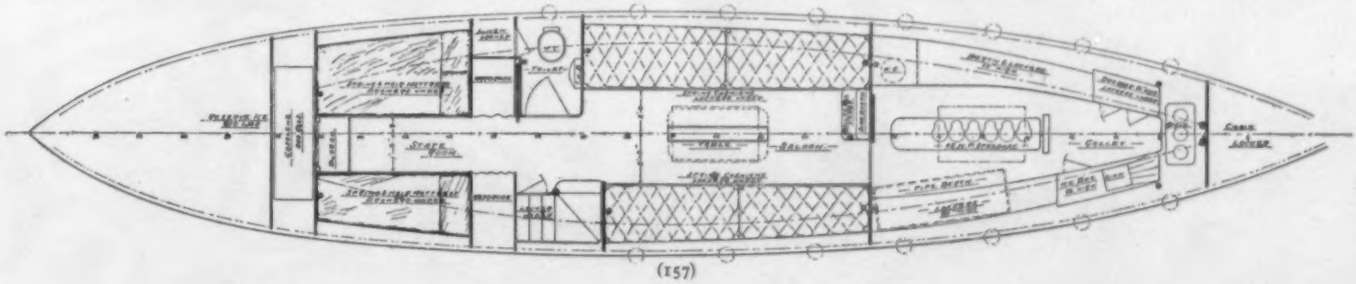
SUMIDA, A GASOLENE CRUISER OF THE SEA-GOING TYPE. NOTE HER AMPLE DECK SPACE AND THE PROVISION MADE FOR LIGHT AND VENTILATION.

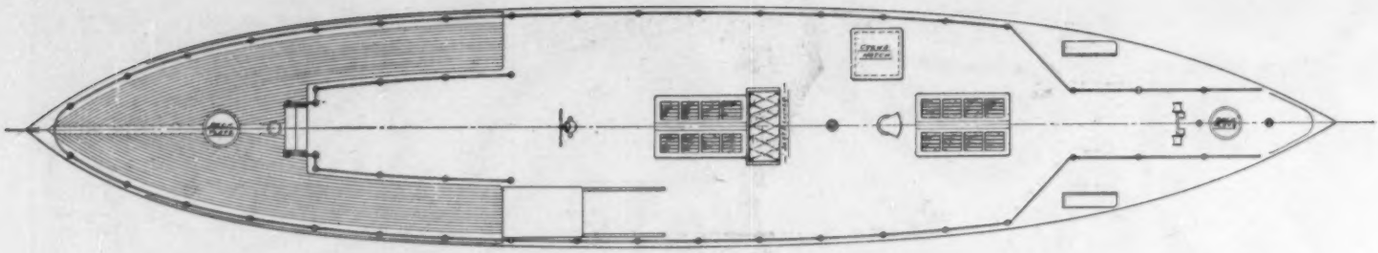
A 60-Foot Raised Deck Cruiser

THE 60-footer now building for F. M. Wilson of New York City by the Gas Engine & Power Co. and Chas. L. Seabury & Co., Consolidated, illustrates a type of large raised-deck power cruiser suitable for long trips or a floating family summer home. She is 53 ft. on water line, 11 ft. beam and her draught is 36 in. This boat has a slightly raking bow and a compromise stern. She has a roomy after deck, which extends forward for 22 feet on each side of the raised after-cabin trunk. The upper deck is reached by two steps leading to the top of the raised trunk just mentioned. Just forward of this is a steering wheel and binnacle, and forward of the wheel is a ventilating deck hatch, forward of which is an upholstered seat with a locker underneath.



From the signal mast aft to the stern, the entire deck is protected from sun and rain by an awning supported on metal stanchions. Forward of the signal mast on the port side is a crew's hatch leading into the engine room. Directly in front of the mast is a ventilating cowl, and forward of this a hatch giving light and ventilation to the engine room and so placed that it comes directly over the motor, a six-cylinder 48 horsepower Speedway engine. At the extreme bow are a winch and davit for handling the anchor, a deck plate giving access to the chain locker, and the flag staff. The anchor davit is erected at the center of the deck, so that the anchor may be swung from either side of the bow. The raised deck is guarded by a brass rail for its entire length, and a continuation of this railing surrounds the after deck, thus making it safe for both passengers and also for the crew when handling the anchor in a seaway. The narrow deck on the starboard side leads to a hatchway from which, by means of four steps and a landing, one enters the after end of the saloon on the starboard side. Underneath these steps the room is utilized as a locker. The saloon, which is 13 feet in length and the full width of the craft, has four extension seats which may be made up into berths—two on each side. Directly in the center of the saloon and underneath the deck skylight is a dining table. At the forward end of the saloon on the port side is a sideboard, with a locker underneath. A sliding door on the starboard side of the forward saloon bulkhead leads into the engine room and galley, which has berths and lockers for a crew of three. At the forward end of this compartment is a stove, a dresser, sink and ice-box. Aft of the main saloon is a passage with wardrobe on each side, and this passage, which may be separated by a sliding door at the forward end from the saloon, leads into the stateroom or owner's quarters, seven feet in length and the full width of the boat. On the port side is a double berth with drawers underneath, and on the starboard side a single berth, also fitted with drawers. A bureau is built against the after stateroom bulkhead and extends across the full width of the stateroom standing room. Aft of the stateroom and separated from it and from the lazaretto by a watertight bulkhead is an 80-gallon gasolene tank, and aft of





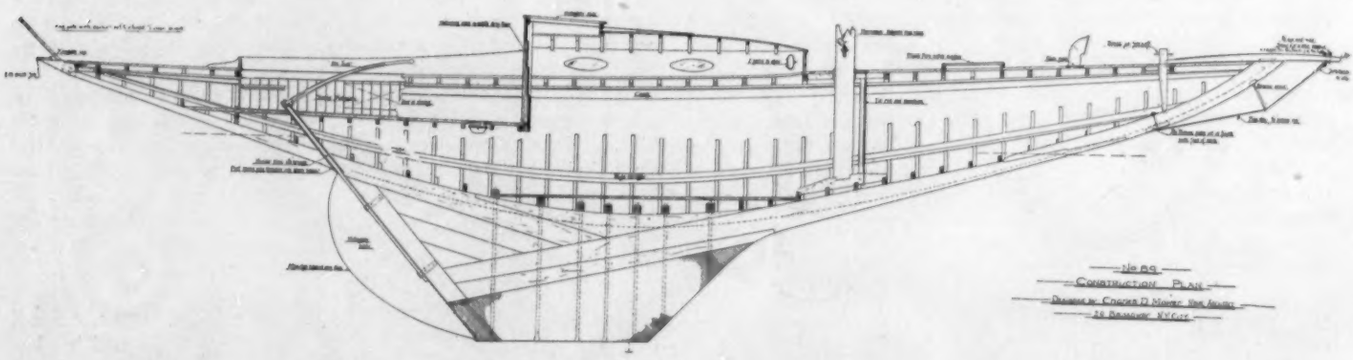
this is storage space which will accommodate the reserve store of a quarter of a ton of ice, which is reached by a circular metal deck plate just aft of the supply pipe of the gasolene tank.

The raised trunk which projects from the raised deck has four large glass drop sash windows on each side and furnishes light, ventilation and standing room to the owner's cabin. In addition to the ventilating hatches already mentioned, there are fourteen swinging brass portlights, seven in each side of the raised deck.

Her cabin is so arranged that four may sleep in the saloon and three in the after stateroom, and the occupants of either stateroom or cabin may reach the deck or toilet without disturbing the occupants of the other compartment.

Her deck space is so laid out that the steersman, while situated far enough aft to be out of the way of water coming aboard in bad weather, has a good view forward and the occupants of the observation seat do not have their vision obstructed by the steersman and do not interrupt him or distract his attention. This arrangement allows a paid hand handling the wheel and not being thrust into the immediate vicinity of owner or guest who may wish to occupy the observation seat. When laying at anchor in calm weather, the upper deck furnishes plenty of lounging accommodation, while the protection afforded by this same raised deck protects the after deck sufficiently to allow its use in almost any kind of weather in which the craft would be apt to be used. She has a very shipshape appearance and her freeboard at the bow is sufficiently great to make her a pretty dry and comfortable cruising craft in all conditions of wind and weather.

The crew have plenty of head room, light and ventilation forward, and the arrangement of the forward railing, winch and anchor davit are such as to insure their comfort and safety. She will have a speed of twelve miles per hour.



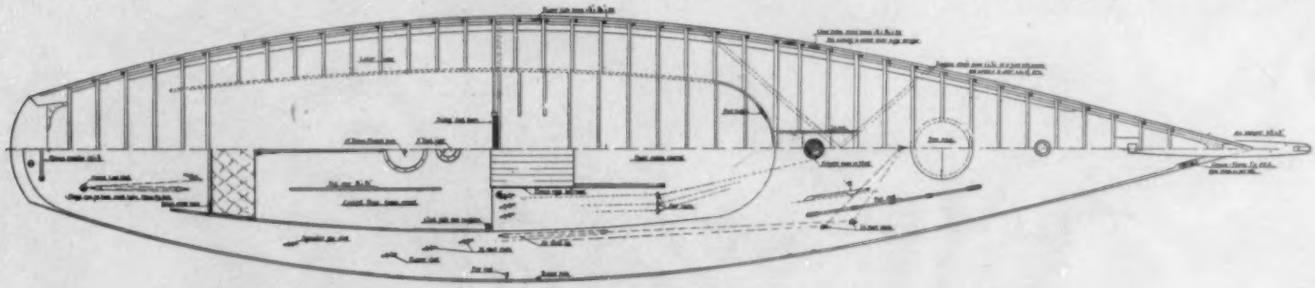
Hoyden—A Class R Boat

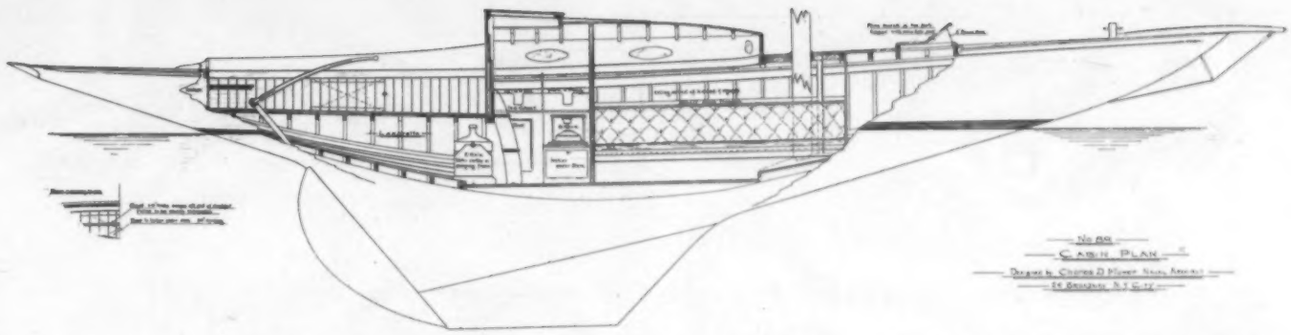
AMONG the new boats of the racing fleet that will attract attention next season will be the Class R sloop, Hoyden, owned by Mr. Donald Abbott of the Seawanhaka Yacht Club.

Hoyden is now in course of construction at the yard of Robert Jacob on City Island, under the supervision of Charles D. Mower, the designer. The hull shows the symmetrical proportions and graceful lines which are characteristic of Mr. Mower's work, and that she will be a formidable candidate for the championship honors of her class may be safely assumed. The boat is being built in the best manner in every detail, and strength and durability have not been sacrificed. She will be suitable for comfortable afternoon sailing and for short cruises, as well as for racing. The hull is double planked, with an outside skin of mahogany which will be finished bright, and all the materials used in the construction have been carefully selected.

The cabin accommodations are unusual for a racing boat of her class and there will be sleeping accommodations for the crew and a small galley and a toilet room with the usual fixtures.

The self-bailing cockpit is square at the after end, across which there is a transom seat, the forward edge of which is just





over the rudder head. She steers with a hinged tiller. Just forward of the tiller is a twelve-inch brass deck plate giving entrance to the lazarette and, forward of this, sunk in the cockpit floor, is a five-inch deck light over the compass.

Two steps lead to a vestibule on the port side of which is ice-box, stove and dish lockers. On the starboard side is a toilet and locker for oilskins. Forward of the vestibule and separated from it by a door, is the main saloon, with transom berths on each side. Above these transoms and running the full length of the saloon, are storage shelves. There is room for a man forward and this forecastle is entered by means of a circular hatch. The hatch cover is hinged at the center, so that it may remain partly open in a drizzle and will also serve as a sort of ventilating cowl. The door separating the cabin from the vestibule is so arranged that when open to its full width it screens the stove and ice-box and makes one room of the vestibule and cabin.

The sail plan shows a similarity to that of the N. Y. Y. C. one-design thirties, as it was Mr. Abbott's wish that the design should be, so far as possible, a smaller edition of these very successful boats. The spars will be hollow and the sails will be made by Ratsey & Lapthorn.

In design, Hoyden is an improvement over Crescent, designed by Mr. Mower last season for a member of the Crescent Yacht Club of Watertown, N. Y., which won the Class R championship of Lake Ontario for the season of 1907.

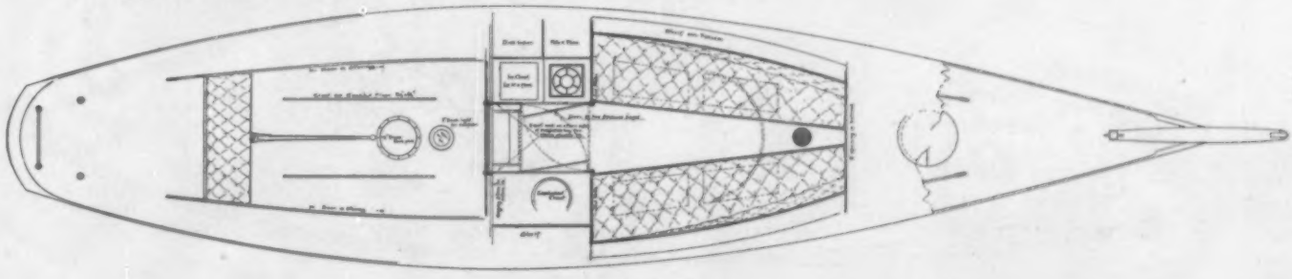
There has been more or less talk of adopting Class R under the Universal Rule for several important events for the season of 1908, and it is to be hoped that the publication of the plans shown herewith through the courtesy of Mr. Mower, will prove an argument in favor of that class, as they show that a boat designed under the rule for a rating of eighteen feet is large enough for the requirements of small boat racing and at the same time is of a good, wholesome type that is useful and serviceable for other purposes.

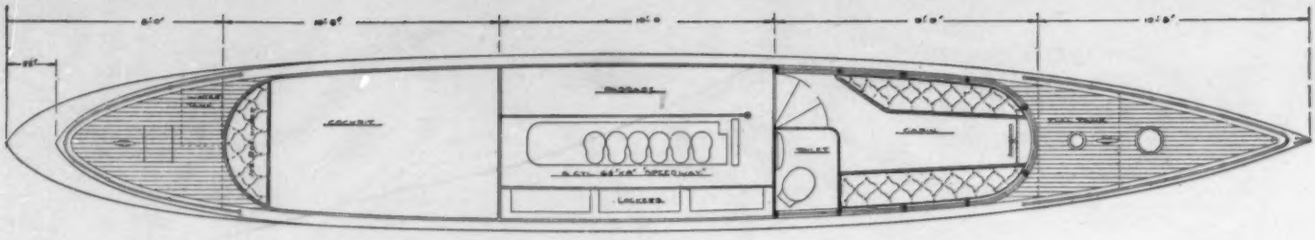
The dimensions of Hoyden are as follows: Length over all, 32 ft. 10 in.; length water line, 22 ft.; beam extreme, 7 ft. 1 in.; draught extreme, 5 ft. 4 in.; freeboard least, 1 ft. 7 in.; freeboard bow, 2 ft. 7 in.; freeboard stern, 1 ft. 9 in.; area mainsail, actual, 398 sq. ft.; area jib, actual, 127 sq. ft.; total actual sail area, 525 sq. ft.; measured sail area, 547 sq. ft.; rating as per rule, 17.9 sq. ft. Hoyden will probably go into commission about May 15th. She will be raced consistently throughout the coming season, and that, together with the fact that she is the first boat in eastern waters to be built for Class R under the new rule, makes her doubly interesting at the present time to every yachtsman.

DECK VIEW, LOOKING FORWARD. A GOOD IDEA OF THE ROOMINESS OF THE COCKPIT AND THE ACCESSIBILITY OF THE STOWAGE SPACE UNDER SIDE DECKS.

BOW VIEW FROM UNDERNEATH, SHOWING THE LONG, GRACEFUL FORWARD OVERHANG AND MARKED DEADRISE OF THE UNDER BODY.

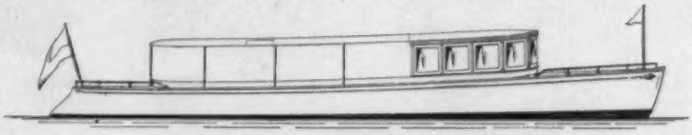
THREE-QUARTERS STERN VIEW. THIS PHOTOGRAPH CONVEYS A GOOD IDEA OF HER DEPTH AND GENERAL PROPORTIONS.





Forty-Eight-Foot Ferry Service Launch

WITH the increase in the number of handsome country places lying along our waterways there has been a corresponding increase in the number of owners of such estates who prefer to travel to and from their places of business by water rather than by rail. The craft illustrated herewith is admirably adapted to such service. She has high power, speedy lines, and, while she has a generous amount of open-air cockpit space for use in fair weather and smooth water, her cabin trunk forward provides shelter and dryness in a rain storm or a seaway.



She is 46 feet 7 inches on the water line and 6 feet 6 inches beam and draws 30 inches of water. Much increase of this draft even at top speed is prevented by a torpedo stern. Her pilot house forward is fitted with large drop windows, so that in fair weather she may be an open boat for her entire length.

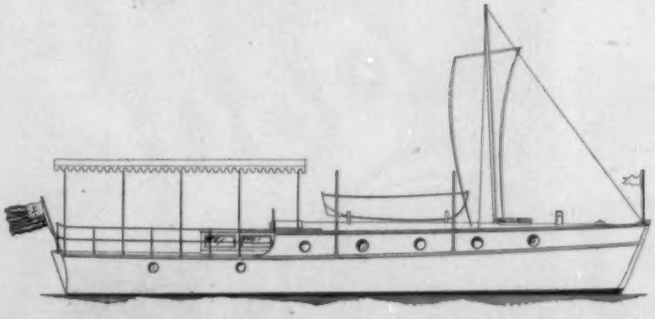
The pilot house has transoms on each side. Aft of her pilot house is the engine compartment, containing a six-cylinder 6½ x 8 Speedway engine, giving her a speed of 22 miles per hour. On the starboard side of the engine is a transom with lockers underneath. On the port side, and separated from the engine by a brass rail, is a passageway leading to the after or passenger cockpit, which, with the exception of a semi-circular upholstered seat in the stern, is left entirely free for chairs. The after cockpit is closed off from the engine room by a glass bulkhead, with door in the port side. There is an ice-box under the stern seat, so that luncheons may be served aboard. Storage room under both decks is reached by means of a circular hatch in the bow and a square hatch in the stern. She was designed by the Gas Engine & Power Co. and Chas. L. Seabury Company, Consolidated, Morris Heights, New York City.

Plans of a Forty-Foot Cruiser

IN THE 40-foot craft illustrated herewith, the builders, the Racine Co. of Muskegon, Mich., have secured the entire fore part of the craft for the accommodation of the owner, whose quarters are divided into a forward and an after cabin, the latter, from its proximity to the galley, offering unusual facilities for hot meals when used as a saloon dining room.

She is practically the same model of hull as that of their 40-foot craft exhibited at the New York Motor Boat Show.

Instead, however, of the raised deck extending but a short distance aft of the bow and being interrupted by a bridge deck, it is in one continuous sweep.

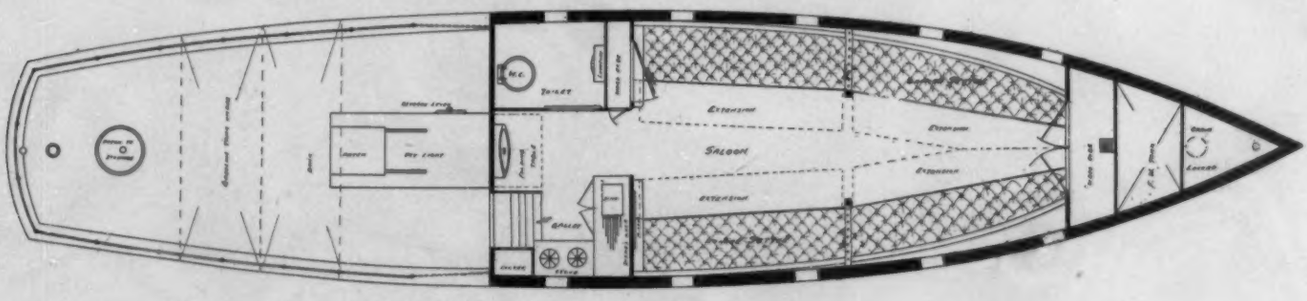


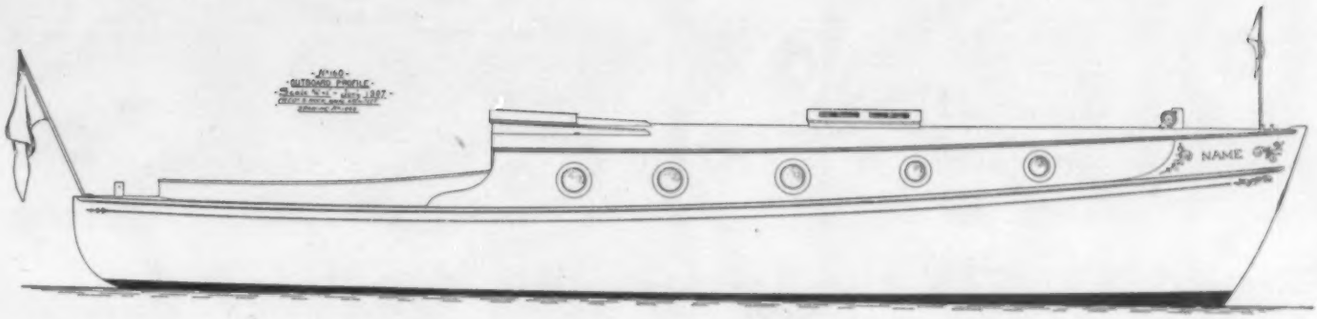
There are two extension berths in each of the cabins, the forward one being finished with a large wardrobe under the forward deck. Toilet and galley are under the rear end of trunk.

The engine is under a raised skylight, of the same height as the forward raised deck. Entrance to engine room and the engineer's quarters under the after deck is by means of a sliding hatch in this skylight. Aft of the engineer's quarters is the gasolene tank, and still further aft is stowage space, reached through a circular hatch.

The after deck is flush and protected by a brass railing, connected by a removable guard chain with the after end of the raised deck. The square counter makes all of the deck space available right up to the extreme stern.

She is rigged with a signal mast and yard and carries a pair of boat davits on the starboard side. The after deck is shielded with an awning, stretched on removable metal stanchions, which, as well as the mast and davits, may be struck and carried on deck.





Myosotis II—A 35-Foot Raised-Deck Cruiser

HERE is another design from the drawing board of Frederic S. Nock, plans of whose Zenda we published in our January issue. This cruiser, however, is of the raised deck type and was built at his yard for Attleboro parties.

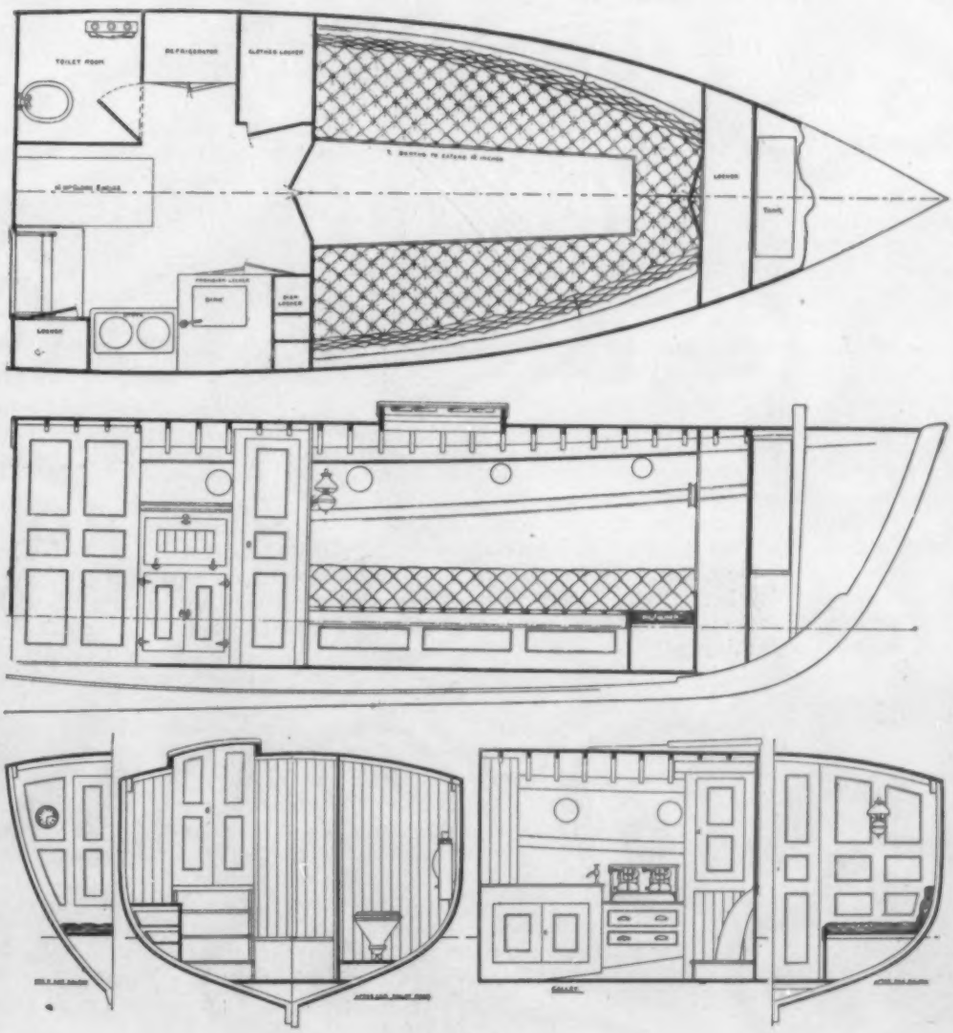
She is thirty-five feet in length, nine feet beam, draws thirty inches of water and is powered with an 18 horsepower Chase engine which gives a speed of ten miles per hour. The cockpit coaming is offset from the side of the cabin trunk, allowing for deck room of about seven inches. The cockpit is self-bailing and perfectly free and clear for the accommodation of chairs. From the starboard side, steps lead down into the combination engine room and galley, which is fitted with a locker, a two-burner Khotal stove, a sink with lockers above and below it. On the port side of the galley, there is a large clothes press and an icebox. The engine room is seven feet in length. Two folding doors lead forward to the cabin or stateroom, which is nine feet six inches in length and the full width of the boat, with the usual extension berths on each side. Forward of the cabin is a large locker running entirely across the boat. Forward of this is the water tank and the chain locker. There are four ports in the engine room and six in the cabin, which is also lighted and ventilated by a skylight and ventilating hatch. The boat is fitted with a winch forward and a tow bitt aft. Her bow, which is a compromise of the spoon bill and the straight perpendicular stem, together with her sheer, makes her more graceful than the average raised-deck cruiser, and her compromise stern and a gold streak just below her gunwale help out in the general appearance.

A feature of the cabin arrangement is the thwartship transom seat at the extreme forward end just beneath the locker doors.

This gives to the cabin an appearance of homelike comfort and also adds to the amount of available locker room under the seats, which a glance at the cross-section will show is considerable.

The arrangement of the galley space allows the cook to turn from stove to sink and vice versa with very little lost motion, while a couple of steps backward and a turn brings him to the refrigerator.

These may seem small points in themselves, but they really go a long way toward making one of the meanest features of amateur cruising, the cooking, as easy as possible.



EDITORIAL

Published by the Yachting Publishing Co.: Oswald Garrison Villard, President Robert M. McBride, Secretary and Treasurer.

Change in the Uniform Rule Nothing was done at the recent Atlantic Coast Conference to disturb the nature or character of the measurement rules as adopted three years ago. Such changes as were made had for their object the clarifying of certain definitions and the prevention of minor evasions of the spirit and intent of the rules as originally formulated. Careless measurers and unconscious accomplices to tricky designers have in the past two years caused evils which eventually suggested themselves to the notice of those yachtsmen steadfastly engaged in furthering all that is best in the sport. All of the additions and emendations just made will have the purpose of strengthening the uniform rule as adopted in 1904, giving a more adequate test than could have been caused by the rules as they existed.

One of the new clauses, that of the highest point of measurement in computing sail area, while at first glance of a minor nature, will tend to settle a point which has been under frequent discussion after every important race. The highest point of measurement has always been regarded as the sheave, the wheel of the pulley block attached to the topmast. Some designers have been in the habit of getting a reduced sail area by lowering the block in which the sheave revolves. This could be done by suspending the block by a pennant (a piece of wire rope), so that the block hangs lower than it is when attached to the pulley at the masthead. While this practice could not be carried to such an extreme as to result in any extremely marked decrease of sail area, yet there was a sufficient evasion to result in harm. The new rule compels the measurer to measure to the top of the sheave, and when it hangs by a pennant to avoid the sheave altogether and measure to the eyebolt at the masthead.

In computing the fore-triangle, it was formerly the custom to measure the P from the highest point of measurement to the top of boom. The result was that in order to make the triangle as small as possible the boom was set high on the mast. This, as is obvious, tended to reduce the sail measurement. One could notice in several new boats this year that the boom instead of rising, as it should rise, one half-inch to an inch every foot from the jaws to the end of the spar, lay horizontal. This meant that the boom had been set so high on the mast that the elevation was impossible. In order to eliminate this reprehensible practice, the triangle is now measured from the highest point of measurement to the deck. The clause compelling measurers to figure the area of the foresail by the distance between the masts instead of by the length of the boom, is another good move. Some time ago it was said of a very successful schooner that her foreboom had been shortened, but that she retained her sail area by keeping her lug. The lug, it might be explained, is a section of the foresail which goes beyond the boom and is held taut by a sheet, in the same manner as a jib. Many schooners carry these lugs, which increase the power of propulsion and are a valuable element. But when yacht owners shortened their forebooms, allowing several inches more of lugsail, the ends of just measurement were defeated. From now, the measurer must carry his tape line between the two masts, so it matters little what methods are applied to the canvas. In regard to the measurement of the quarter beam, measurers are required hereafter to actually measure the boat itself, instead of basing their measurements on the plans of the hulls as furnished them by designers.

The majority of racing yachtsmen, who felt that boats should be built to the top of their respective classes, were extremely disappointed that this matter was not brought up for action. The case of Avenger, built at the bottom of Class K, rating 49.01, racing against the 57-footers rating at the top of Class K, is an example of the evil which this latitude allows. The allowance that the 57-footers were obliged to give Avenger put them out of the race, one might say, before they entered it. The question might well have been considered by the various members of the Conference and decisive action taken. We are of the opinion that the Conference did well in refusing to change the time allowance tables. In the past months, many requests that this should be done have been heard, but, as a matter of fact, no data could at the present time be collected to give adequate ground for changing the present 70 per cent. of the full theoretical time allowance on which the boats now race. Years ago the time allowance table was 50 per cent. minimum speed. This was found not sufficient and in the early eighties it was raised to 60 per cent. In 1900, the New York Yacht Club and the Eastern Yacht Club raised the allowance to 60 per cent., and the Atlantic Coast Conference compromised between 80 per cent. and 60 per cent., and split the difference, making it 70 per cent. At the end of the season 1905, the Gielow Committee of the New York Yacht Club examined the data in regard to the working of the 70 per cent. scale, and while hampered by lack of new boats, decided that the percentage of allowance could not be improved upon. No further changes were made in any respect, and it is a matter of congratulation that no material alterations were agreed upon. As the matter stands now, the rule has produced such wonderful boats as Queen, Effort and Avenger, and gives every indication of permanence.

Scantlings The disbanding of the committee appointed by the New York Yacht Club nearly a year ago to consider the question of scantling restrictions and to devise an acceptable plan for adoption by the Club, will appeal to various yachtsmen in various ways. The committee went exhaustively into the matter, but with the results in hand it was found that many problems remained unsolved. So the final report was against the adoption of any scantling restrictions whatever. It will hardly be denied by any practical yachtsmen that a code of scantling restrictions would benefit the sport, but it would be suicidal to proceed along the lines of partially demonstrated theories or those to which practical application is impossible. It would have the effect of restricting legitimate progress, and if we are to move ahead, designers must at least have freedom. Racing boats, as compared to cruising craft, are necessarily of light construction. It does not appear that designers have overstepped the danger line in this regard. When they do, some more decisive action than that taken by the New York Club Committee will be in order. In the meantime, we can observe the workings of the scantling system as now being applied in Massachusetts.

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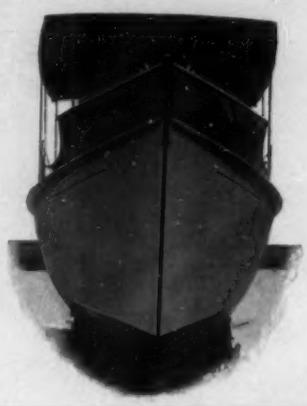
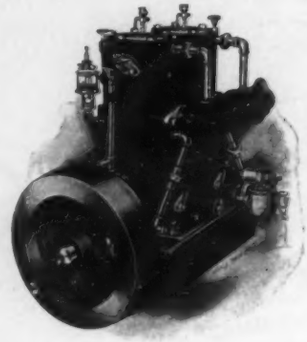
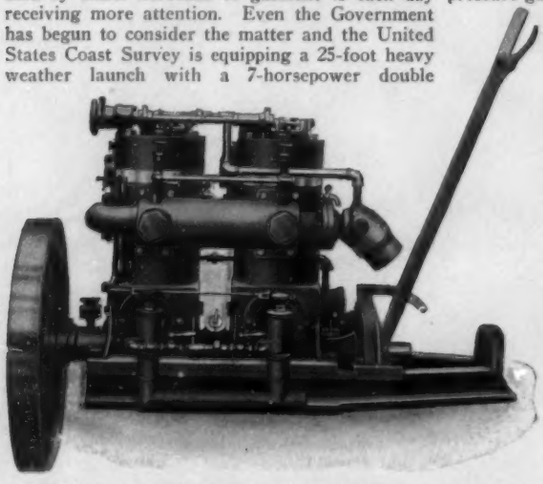


MOTOR BOAT SUPPLEMENT

New Ideas in Craft, Engines and Accessories



Uncle Sam Invests in Kerosene-Gasolene Engine. With gasolene constantly threatening to become higher in price, the engine that can be operated by either kerosene or gasolene is each day receiving more attention. Even the Government has begun to consider the matter and the United States Coast Survey is equipping a 25-foot heavy weather launch with a 7-horsepower double



A Fay & Bowen two-cylinder engine using either kerosene or gasolene at the will of the engineer. This engine has two distinct sets of fuel feed apparatus.

cylinder convertible Fay & Brown kerosene-gasolene engine. This motor is in addition to a complete kerosene equipment, an auxiliary gasolene tank allowing the engine to be started with the latter fuel, although the construction is such that the motor may be operated entirely with kerosene.

We illustrate herewith a double cylinder 7 horsepower engine in the convertible kerosene and gasolene type. It will be noticed that its appearance differs but little from a standard type of motor. It is not, however, a standard type with a kerosene attachment, but the cylinder construction itself is different, although in general design and outer appearance it differs but little from a standard gasolene motor.

This engine has the complete gasolene feed, the same as the regular type, and can be operated on gasolene as perfectly as a regular gasolene motor, but with the added advantage that kerosene can be used as fuel if desired and the machine operated thereon without the use of any gasolene whatever.

There has been no attempt to feed the kerosene through the same vaporizers as are used for feeding the gasolene. The kerosene fuel is applied through special needle valves, which are shown above the exhaust pipe in the cut. The kerosene is placed under a slight pressure in its tank, not more than seven or eight pounds being required, and this pressure is obtained by means of a power pump furnished with the machine and which on the smaller sizes is belt-driven, but on the larger engines is direct-connected. The kerosene tank should be supplied with a low pressure gauge, as the pressure pump has a regulating valve which can be adjusted to maintain a steady pressure.

The kerosene charge is not ignited by the hot tube generally used on kerosene engines, but is ignited by an electric battery outfit, the same as if gasolene were used. This also gives a great range of speed control. The kerosene is thoroughly vaporized, thus eliminating the unpleasant exhaust odor.

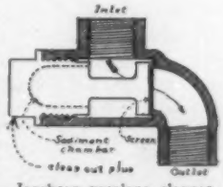
With kerosene fuel there is a gain in this engine of approximately five per cent. in power over the use of gasolene. The consumption per horsepower hour is almost identical under kerosene as under gasolene, being approximately one pint per hour for every actually developed horsepower. The economy in the operation can, therefore, be figured almost exclusively on the difference in cost between the two fuels.

When operated on kerosene exclusively without the use of gasolene, the motor is started by removing the two hex plugs shown on the cut in the exhaust, and by applying heat by means of a torch for three to five minutes, when the machine will start readily. After running for a time and becoming thoroughly warmed up, it can be stopped and allowed to stand for some time and yet start again without further heating. It can also be started by priming the cylinders with gasolene by means of a squirt-can inserted through the priming cocks on the cylinder heads, and turning the engine over to explode the charge. After doing this three or four times the machine is sufficiently heated to start and operate on kerosene. The ideal way is to carry a small supply of gasolene regularly connected to the gasolene vaporizers and use it for starting only, when the gasolene can be shut off and the kerosene applied. These different methods give the operator a wide range and make the machine practical for either the pleasure launch or the heavy service boat.

A series of experiments with denaturalized alcohol applied to this type of motor through the kerosene vaporizers have demonstrated that it operates successfully, but that the fuel consumption per horsepower is greater when alcohol is used.

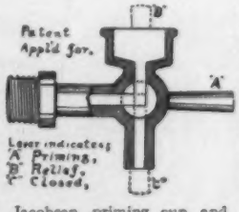
Addition to the Sta-Rite Family Two new spark plugs have been added to the Sta-Rite family. The first is styled the Gotham Sta-Rite, and its chief peculiarity is that it has an extended shell partly closing the inner end and protecting the porcelain from heat, oil or soot. The porcelain has a single, hollow tube packed with copper asbestos-filled gaskets which cannot become wedged in. This plug is particularly recommended for engines using a great deal of oil. The other addition is No. 4A Magneto plug, in which the insulated electrode has an enlarged head equipped with four points, any one or more of which will serve as a jumping point for the spark. Much greater efficiency is claimed for it in connection with a magneto than for a single gap plug. Both of these are made by the R. E. Hardy Company of New York.

A Gasolene Cleaner. Clean gasolene, unmixed with water may always be obtained by means of another new device, also by Jacobsen, a gasolene strainer and separator. The strainer is attached to carburetor and the gasolene pipe to the strainer, and the dirt and water settle in the cleanout plug, from which they may be easily removed without disturbing the piping.



Jacobsen gasolene cleaner and strainer. An attachment for insuring a continuous feed of clean gasolene, unmixed with water.

Combined Try Cock and Priming Cup. A device combining the service of both try cock and priming cup has just been brought out by C. M. Jacobsen of 238 Jefferson Ave., Detroit, Mich. The accompanying illustration gives a good idea of both its appearance and operation. When the handle is in position A the apparatus is a priming cup, when in position B it is a try cock, and tightly closed. It is intended to replace the ordinary try cock and is neat and attractive in appearance.



Jacobsen priming cup and relief cock. This serves a combined purpose and is easily attached to the motor.

Light Weight Wash-Basin Something new in the way of a folding wash-basin has just been brought out by the Goblet-Dolan Company of 126 Front Street, New York City. The basin occupies 13 by 18 by 5 inches when closed. It is of heavy copper, nickel plated, and there is absolutely no porcelain or enamel that might be damaged—what the cruiser wants, something light, bright and attractive.

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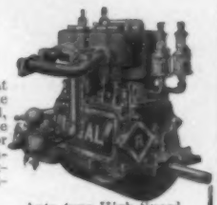

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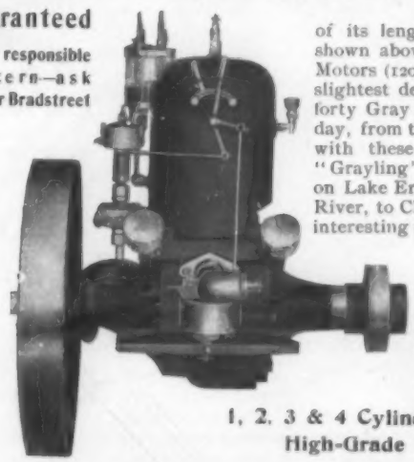

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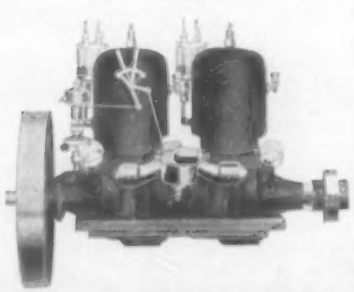

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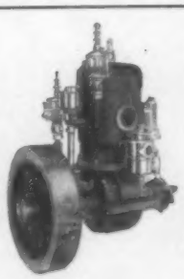

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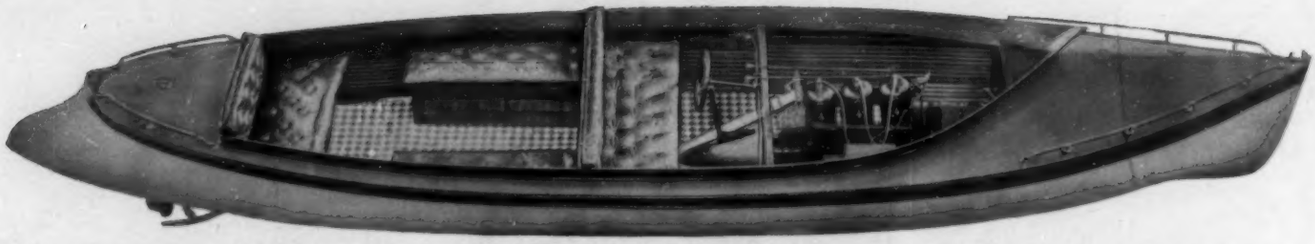
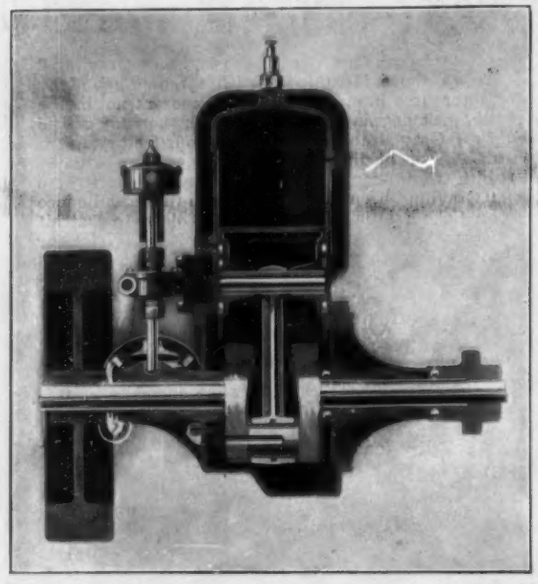


Mullins 22 Foot Speed Launch. Her planking or shell is of steel, the ribs, keel and deck are of wood, the latter canvas covered. Her speed with a 3-cylinder 16-20 H. P. Ferro Engine is from 14½ to 15 miles per hour.

Gray Improvements for the Coming Season

The Gray Motor Co. for 1908 offer an engine with some very interesting features.

The design shows a great deal of study and, apparently, the result of much practical experience.



Cross Section—showing Lubricating System, Ball Bearing Thrust, Long Bearings and general simplicity of motors.

The cross sections published herewith show up many of these features very distinctly.

The same dimensions are maintained as last year's engines, so far as bore, stroke, size of piston and so forth, are concerned.

A rotary gear-driven pump has been substituted for a plunger pump.

A very novel feature is in the carburetor and commutator, controlled from one sectional point on the cylinder.

The carburetor is of the Gray Motor Company's own design, with a very large float chamber, and a commutator which they claim gives the highest range of control and the highest economy in the consumption of gasolene. The gears driving commutator and pump are entirely enclosed so that no oil grease can be thrown into the boat.

The lubricator is made from the Gray Motor Company's own design on the single-cylinder engine, having the novel feature of two feeds from the one lubricator, and is placed in a very conspicuous part of the engine.

By referring to the cross section of views shown herewith, it will be observed that the bearings on this engine are very long. These bearings are bushings, made of the highest grade babbit, machined to a perfect fit, and are interchangeable.

While the Gray Motor Co. recommend babbit for bearings, they are willing to furnish bronze to customers without extra charge.

Two sets of ball thrust bearings are used on each motor.

The lubrication for the connecting rod is secured by dropping oil into a ring on the crank shaft and counter-balance, which carries the oil to a reservoir in the crank case.

The connecting rod and crank-shafts are high-grade drop forgings.

All the crank-shafts, pistons and cylinders are ground.

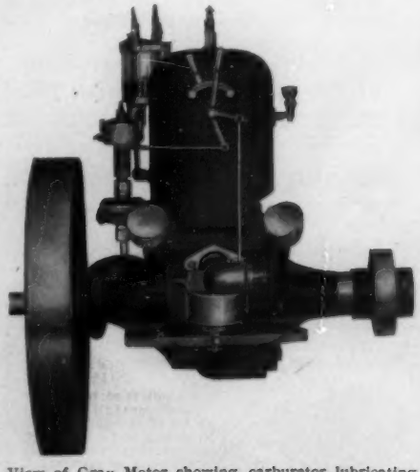
The connecting rod bearings on this engine are interchangeable, and new bearings can be fitted to any engine in a few minutes. There is a large opening into the crank chamber, permitting quick examination of the connecting rod bearings and permitting adjustment of the same without tearing down the engine.

The two, three and four-cylinder 1908 Gray motors are lubricated by a pump force feed system. The main bearings are lubricated by extra large brass dope cups.

The Gray Motor Co. have just completed and moved into a new plant, which they claim to be the largest in the world devoted exclusively to the manufacture of two-cycle marine engines, and, in spite of the recent financial depression, it has been one of the few factories of any character in Detroit that has run full force through the entire flurry and, of late, has been working nights as well, so as to be prepared to make quick shipments of their motors.

Gray motors are built in 2½, 4, 6 and 10 horsepower single cylinder; 8, 12 and 20 horsepower double cylinder; 18 horsepower in three-cylinder, and 40 horsepower in four-cylinder sizes.

Gray motors will be exhibited at the Sportsman Show at Madison Square Garden, beginning February 20th.



View of Gray Motor showing carburetor, lubricating system, throttle and commutator controls.

A Steel Speed Boat with Under-water Exhaust.

A new steel 22-foot speed boat is being manufactured by W. H. Mullins Company of Salem, Ohio.

She is 4 feet 10 inches beam, draws 23 inches of water at skeg and is guaranteed to make 15½ miles per hour. Dry, seaworthy, comfortable and safe, she is as staunch and durable as a small battleship and finely finished, combining all the desirable features of a pleasant family launch with great speed at a moderate price.

The interior arrangement is a new departure and certainly makes an attractive and pleasant boat. The engine is installed well forward in a special compartment separated from the cockpit by a handsomely paneled oak partition on which is placed the special automobile steering wheel, also spark and throttle control levers, thus the passengers will not come in contact with the machinery or moving parts.

The engine is both started and controlled from the steersman's seat, the efficiency and simplicity of the control of the engine being the same as that of an automobile, a feature that will be appreciated by those who have used boats where it is necessary not only to crank the engine in starting but to be brought closely in contact with it.

The motor power is a 3-cylinder 16-20 horsepower Ferro Engine equipped with Special "Mullins" Starting Device, Reverse Gear, Mullins Silent Under-Water Exhaust, Automatic Quick-Starting Float-Feed Carburetor, Spark and Throttle Control Levers, Pressure Sight-Feed Oiling System, Dashboard Coils in Special Case, Batteries, Spark Plugs, Wiring and Switch.

H. C. Squires' Sons, General Sales Agents, 44 Cortlandt Street, New York City, will exhibit the Mullins boats in the National Motor Boat and Sportsman's Show at Madison Square Garden, New York City, February 20th to March 7th, 1908.

An Anti-Back Kick Timer.

Anything in the line of ignition apparatus is always of interest to the motor boatman. For this reason the Monitor Timer and Distributor will undoubtedly attract considerable attention.

This article is claimed to possess the following advantageous points. It will not permit the engine to be driven backwards, and thus secures safety from danger of a "kickback" when cranking. The length of contact time is easily regulated by the adjustment of a single screw. The peculiar nature of the material now used for insulation allows the use of the instrument in locations subjected to the highest temperatures, with no danger of injurious effect to the mechanism.

While it is made to run in but one direction, this direction may be either to the right or to the left as may be desired. It is claimed that it breaks circuit very quickly, producing a good spark from a non-vibrating coil. The construction of the Distributor is such that, when used on a 4-cylinder engine, the current must jump at least one inch to go either to the wrong plug or to ground, and the secondary wires are secured to heads which turn loosely, thereby avoiding the danger of the wires breaking at the ends of the insulation.

INGOMAR AND QUEEN EQUIPPED WITH "LOWELL" SPECIAL DUCK, ROUNDING THE STAKE IN THE NEW YORK YACHT CLUB'S SPRING REGATTA

DID YOU WIN RACES? If not perhaps it was because of poorly drawing sails. Next year specify **LOWELL CANVAS** on your next suit. You will then be sure of having a perfect fit and your yacht will attain its highest efficiency.

One of the most important considerations in racing is well-fitting sails,—in fact they are as essential as a well-designed hull. Last season's racing among certain well known yachts clearly proved this.

The unquestioned superiority of "LOWELL" duck is proved by the fact that, since the "Defender," every Cup-Defender has used Lowell Duck and the same is true of every large yacht of recent years, with hardly an exception.

For cruising and pleasure yachts "Lowell" canvas is universally recognized as the standard. For this purpose the "Regular" quality is recommended. For racing "Special." Specify these when ordering from your sail maker. Made in all weights from 4 oz. for 15-footers to No. 000 for cup-defender sails.

All the leading sail makers of the country use "Lowell" duck. Samples and quotations may be obtained from them.

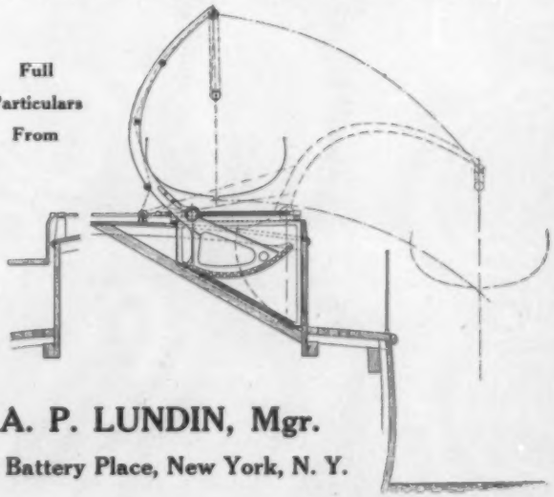
LOWELL WEAVING COMPANY . . . . . LOWELL, MASS.

Welin Quadrant Davit

Special Gear for Power Boats

ONE MAN CAN, WITH PERFECT EASE, LAUNCH A TENDER OR ROWBOAT IN FROM 30 SECONDS TO ONE MINUTE

Full Particulars From



A. P. LUNDIN, Mgr.

17 Battery Place, New York, N. Y.

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If your batteries work when the engine of your boat is idle, they will refuse to work when you are on a cruise.

Edison Primary Batteries do not consume themselves when not in use. That is why the current is steady and strong until the elements are entirely exhausted. Equip your boat with Edison Batteries and an Edison Sparking Outfit and you will be sure of each day's sport.

"Battery Sparks" is a little book that tells you all about this important detail. Sent free.

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Build Your Own Boat
BY THE Brooks System

I can sell you a boat for one-fourth of what a factory would charge.

I will sell you 100 cents' worth of actual value and results for 25 cents. Is it worth considering?

I cannot tell you my whole story here, but if you will send for my catalogues they will prove what I claim. Give me a chance—right now, today. Read my guarantee—it means you take no risk.

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Whether you buy boats, patterns, knock-down frames, engines or knock-down furniture of me, I absolutely guarantee that you will be satisfied. I will instantly refund your money if you are not. I stand back of every statement in this advertisement. I have made them as strong and convincing as I know how. The goods warrant it.

C. C. Brooks.

You Can Save Three-Fourths

I have revolutionized the boat-building business. I have spent the last twenty-two years in building or sailing boats, and am a practical boat man.

Seven years ago I originated the Pattern System of boat-building. To-day my customers are found in every civilized country on earth.

Over 50,000 boats (more than the combined output of all boat factories) have been built from my system, mostly by inexperienced men and boys.

Over half of these have built several boats—a large number have established themselves in the boat-building business.

I also send *free* the patterns and complete illustrated instructions needed to finish the boat. *I can save you* (1) *boat-builder's profit*, (2) *labor expense*, (3) *big selling expense*, (4) *seven-eighths freight*. You can figure this out yourself.

Boat Patterns, $1.50 and Up

Anyone can build a boat by using my exact size printed paper patterns and illustrated instruction sheets, telling how to do every little detail. *You cannot fail* to build as good a boat as the professional boat-builder.

A SET-UP FRAME

A SEMI-SPEED MODEL

My boat catalogue shows all kinds of boats, tells why the patterns cannot fail to be right, and why anyone can build a boat from them.

Special Bargain Offer

This boat (No. 233) is 15½ feet long and has 48-inch beam and 36-inch depth at bow.

It has a crowning deck forward, and as seen by illustration, is every inch a launch, not a row boat masquerading as one.

The frame is clear white oak and the planking is cypress strips ⅝ inch thick, with our hollow and round seams, edge nailed, all fastenings and iron work galvanized for salt water.

LAUNCH NO. 233

Fittings are two cleats, two flagstaff sockets, tank plate, all polished brass; 5-gallon galvanized tank, lead piping, rudder, rudder port, tiller, tiller rope, fairleaders and outboard shaft support. (1) Price of patterns $3.00. (2) Price of complete knock-down frames with patterns and instructions to finish, $12.00. (3) Price of complete knock-down body, consisting of all the above, with planking, decking, coaming (hardware and fittings included, $33.85.

Price of the finished boat complete, ready to install engine, $75.00.

Combination price of knock-down frame and 3 h. p. Type "E" engine with outfit as described in special engine offer, $70.00.

Combination price complete knock-down boat as described, for $34.35; (same engine outfit), $90.

Price of complete launch, to include all of the above, also three coats white lead paint on outside, interior decks finished with spar varnish, with engine installed, all ready to run, $125.00.

Knock-Down Boat Frames

Many people prefer to buy my knock-down frames (all ready to put together) for their boats, instead of working up the rough lumber.

Owing to my immense factory facilities, I can in many cases supply knock-down frames in clear, seasoned oak, *at a lower price* than you would pay for suitable raw material.

Every piece of knock-down frame is accurately shaped and machined, ready to put together.

SPECIAL ENGINE OFFER

Type "E" $65.00 Weighs 58 lbs.

Here is an engine I know is all right. "The Brooks Special" has a copper water-jacket, and complete marine and electrical equipment. Ready to install. 3 h. p. Will supply this engine together with special 15½ foot K. D. launch frame built especially for it for **$70.00**. Don't buy before you investigate this. Send for my engine catalogue—it's free. Save money by getting our special low combination prices on all sizes of engines and frames when bought together.

Write me personally for my boat, engine or furniture catalogue, whichever you want. Sent free.

C. C. BROOKS, Prest., BROOKS BOAT MAN'F'G CO.

(Originators of Pattern-System of Boat-Building)

2703 SHIP STREET, SAGINAW, MICH., U. S. A. **No. B-908**

The Baby Arc Searchlight A moderate sized searchlight right at the steersman's hand, which can be used to sweep through an arc of considerable magnitude, and which will give a clear, penetrating, long-distance light, is what the power boat owner, whose craft is of moderate size, has long desired. The Baby Arc Searchlight, illustrated herewith, fills the bill. It is fitted with a seven-inch Mangin lens mirror and is particularly adapted for those craft on which a larger size would be out of proportion, not only on account of the weight and bulk but for reason of the larger-sized generator needed to furnish illumination. With the seven-inch searchlight, a strong, piercing white beam is thrown from one-quarter to one-third of a mile. It can be furnished with a generator belted directly to the engine flywheel, weighs but 45 lbs. and is but 17½ inches in diameter. This generator will work satisfactorily at all reasonable ranges of speed.

BABY ARC SEARCHLIGHT WITH A 7-IN. MANGIN LENS

The high power of the light is secured through the concentration of the focus by a perfect lens mirror. The Baby Arc Searchlight has an automatic shunt feed, by which the carbons feed together automatically, as they burn, and this is done just as smoothly as in a larger-sized equipment and insures a uniform strength and quality of the searchlight beam.

The searchlight is hand controlled and is provided with a handle on the back for guiding the beam, both vertically and horizontally, and is furnished with a pedestal mount. The height of the light, including the pedestal, is but ten inches, and the width is eight inches. The standard finish is of full polished brass. The storage battery outfit, suitable for this light and generator, consists of thirty cells of twenty-ampere hour storage, with sealed-in battery of marine type. A switchboard with pilot lamp, volt meter, ammeter, automatic storage battery, charging switch, volt meter switch, end cells switch and fuse control switch is made especially for this equipment. The storage battery is of sufficient capacity to run the searchlight for about five hours on each charge. The manufacturers of this moderate-sized outfit are the Richardson Engineering Company of Hartford, Conn.

A Light Weight Canoe Motor Even the canoeist is to-day being supplied with motors small and light enough to be installed aboard a craft seventeen feet in length. Only a few years ago the weight of such bits of mechanism were out of all proportion to the weight of the craft in which they were installed.

At the recent motor boat shows, however, there was exhibited an engine of two horsepower, installed in an 18-foot canvas-covered canoe.

At the Sportsman's Show, a 20-foot canoe, with a 2 horsepower motor, was exhibited and now it is stated that The H. & D. Folsem Arms Co. will carry in stock during the coming season a line of these small craft, powered with the Ferro engine.

These craft will be about 20 feet in length and will hold four people comfortably.

SEARCHLIGHTS—Lighting Talk Number 3.

IF you do any night sailing, you will find an electric searchlight the greatest comfort and convenience that it is possible to conceive.

Equipped with one of these, you can pick out your way through narrow channels, through crowded anchorages and always find your mooring buoy.

With an electric searchlight, the light is equally brilliant during the entire period of its use, a condition which cannot be obtained with any other form of illuminant.

We have many styles and sizes. The choice depends largely upon the size of craft and the conditions under which she is navigated, and had best be settled by correspondence.

The method of installation and operation of the searchlight system may be either independent of or auxiliary to the interior illuminating and side light outfit, and we will, upon receipt of data as to size of craft, power or engine, and waters upon which she is used, be able to give you a very good idea as to the required outfit and the cost of same.

Our 7-inch **Baby Arc Searchlight** is perfectly adapted for boats under 50 ft. and is the only **real searchlight** of this size. It takes but a very small generator to run it and yet it throws a light ¼ to ⅓ of a mile; will do ½ mile under favorable conditions. It will certainly pay you to investigate it before getting any other.

The Richardson Engineering Company

Hartford, Conn.

BRIDGEPORT BRONZE PAINT

Our Famous Stamp

"We guarantee to refund the amount of this bill if at the end of the season there is any sea growth on the bottom of the boat, on which two coats of our B. B. Paint have been properly applied."

The American Lacquer Co.

THIS MEANS *that when you have applied our Bridgeport Bronze Paint thoroughly on the bottom of your yacht in March or April, that in October you will find the paint still free from any sea growth, and you will not have had to haul out for a single day for scrubbing off or re-painting same.*

The BRIDGEPORT BRONZE MARINE PAINT CO.

SELLING AGENTS, PAINT DEPARTMENT.

THE AMERICAN LACQUER CO., Bridgeport, Conn., U. S. A.

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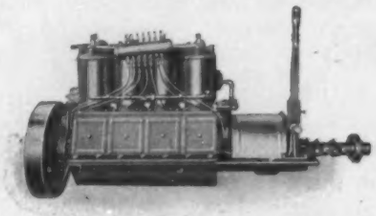
Everything for **Boats and Engines**

Tells the story except that we have



Type of 24 and 40 H. P. Lamb

THE ENGINE

All sizes in stock from 1 H. P. to 100 H. P.

Prompt Delivery. Complete Line of Marine Hardware and Specialties. **Send for Catalogues.**

G for Engines, H for Fittings and Supplies.

GEO. H. TERRY CO., 92 Chambers St., N. Y. City

The 14th Annual

Motor Boat and Sportsman's Show

At Madison Square Garden, New York City

February 20th to March 7th, 1908

THIS is the Regular Annual Show, destined to be even more successful and popular than its predecessors. It will give to its exhibitors ample return for any investment; being held at a place where the public will go, and at a time when they are prepared to buy, especially so, knowing they will find the latest and up-to-date models displayed just prior to the opening of the boating season. Boats and Engines in centre of main floor; demonstrations under their own power.

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NEW YORK CITY

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THE SACRIFICE

(Continued from Page 141)

the well deck, filling it for the moment level with the rails.

One man gone! The thought hung in William Nash's mind like a red fog, as he climbed to the bridge, snatched a megaphone from Tewson's hands and turned it upon Talmedge not ten feet away.

"Mr. Talmedge . . . back of the funnel . . . over the fidley grating you'll find Maconachie and the rest. Take the men in No. 2 hatch and haul out oil barrels . . . empty them in sea . . . got to stop these combers breaking aboard. . . . That's all's needed now. Lively and we'll walk this ship to port."

In a few minutes the second officer and third officer and their men were on the well deck again, and finding the water had settled below the cargo line, Maconachie and a handful of sailors clambered down and began to pass the bights of hand lines about a barrel which had hurtled from out the darkness and was tottering in the middle of the uneven, soggy, working floor of freight as though undecided where to plunge next.

Nash remained on the bridge with Tewson, gripping the dodger ridge with blue hands, glancing alternately at the tumult ahead, at the men lowering their lines into the hold, or back into the wheel house, where a quartermaster stood with his hands on the spokes, stolid, immobile. The gale was beginning to shriek to a renewed fury. Spindrift and frequently solid water lashed his face. The sea was a vast confusion of sound, so thunderous that even thoughts were blur red.

Tewson leaned sideways and yelled into his captain's face.

"She's lower. . . . No lift to her for'ad at all."

"Not lower!" shouted Nash, with stern intensity. "Not lower. . . . She rides easier. . . . That bulkhead'll hold. . . . She goes to port. Stand fast!" he added. "Here comes a rotter."

As the wave rose over the port side forward a faint chorus of warnings floated astern. The next instant it made a clean breach, thundering down on the lee deck, battering the two lifeboats that remained into twisted lengths of junk, shattering the rail, bending stanchions double. The plunging flow caught at the bodies of the seamen working over the second hatch and hurled them crashing into the scuppers. All but one arose quickly and scrambled back to their work. This man, a giant Swede, lay where he fell, merely a blot of wet rubber and a dead gray face on the seabitten deck. The men saw him and paused, and then, despite the entreaties of Talmedge, they started for the protection afforded by the corridor running under the bridge deck.

But they had not gone ten steps when Nash, who had rushed down from the bridge, was among them, striking right and left in blind fury.

"You soldiers! You dogs—flunking now! Let that dead man scare you! You're not worthy to look at him. . . . Come on back here. . . . I'll show you. . . . Or jump overboard, the quicker the better. . . ." He seized the dripping, tangled lines, the men tailing in with curses, but with renewed energy, as a shout from below gave the word that Maconachie and his half-drowned band, working in water above their knees, had attached the barrel. Up it came; and the crew cheered as though in that dripping object they saw ultimate victory.

Just under the forecastle head the rails on both sides had parted from the deck and here the barrel was rushed and broached with an axe, the men retreating before the next wave. The heavy fluid flooded the planking and trickled sullenly down the sides. The next wave did not rise so high and neither did it break, and with cries of

A Notable Achievement of Ours

in sail making has been the equipping of

LITTLE RHODY II.

which made such a remarkable record last season in winning ten first places, seven second places and ten third places out of thirty-three starts. She finished second in the championships of the Boston and Corinthian Yacht Clubs and of the Massachusetts Yacht Racing Association. Winner also of the Exposition Cup at Jamestown races last September.

LITTLE RHODY II. is only one of many notable boats for which we have furnished sails. Among a large number we have equipped are the following:

VERGEMERE	CONSTANCE	CORONA
ALCYONE	RESOLUTE	INTREPID
EFFORT II.	KATRINA	ELMINA II.
ARIADNE	DERVISH	TAORMINA
WEETAMOE	SPIRIT	ELEANOR
	DOROTHY Q.	

The Fabric Used is in no small degree responsible for the success of our sails. It is made under our own formula, of the best combed peeler American cotton, and is the result of a lifetime's study of racing canvas.

Special attention given to making of
Racing Sails for all classes.

WILSON & SILSBY

Rowe's Wharf, Boston, Mass.

Our Cable Address is "WILSAILS," BOSTON, W. U. C. C.

LITTLE RHODY II.

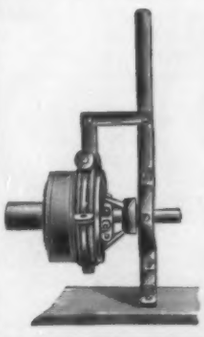
Edson
Steering Gears

have stood every test for nearly fifty years.

Established 1859.

EDSON MANUFACTURING CO.
260 Atlantic Ave., Boston, Mass.

YOU WILL BE INTERESTED in the improved



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Reverse Gear

FOR MOTOR BOATS

Made only of Hardened Steel Spur Gears. Most Reliable. Highest Grade. Easiest to Install.

FOUR SIZES CARRIED IN STOCK.

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NEW YORK GEAR WORKS

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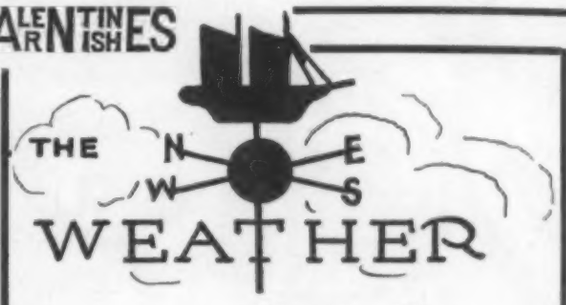
VALENTINE'S VARNISH



has less effect on

VALSPAR

than on any other spar varnish. Valspar is made on entirely new principles and stands alone as the best finish ever produced for all marine purposes. It works easy, dries quickly and

It won't turn white

VALENTINE & COMPANY

New York Boston Chicago

VALENTINE'S VARNISH

triumph another barrel was rolled down on the plunge of the bow. But the following comber was not to be denied. Oil or no oil, it curled high over the bow and descended with a deafening crash as the men dashed into the corridor under the raised deck at their elbows and through it to the after deck. Nash, now transformed, burning with a sullen, consuming rage, followed them.

"Damn you for cowards, all," he shouted. "You run when Maconachie and his men are down in that hold! Out, every man jack. For'ad all." He struck at them as they huddled back through the dark, reeling passageway to the forward deck, where they met Maconachie and his men, who had struggled up through the flood.

"I'm a-goin' up on the bridge deck and I'm a-goin' to stay there," he yelled, shaking himself like a wet bulldog and cursing.

"Yes, everybody up there," roared Nash. You might get wet down here." He stopped suddenly and looked hard at them all. He knew there was nothing to do now and he knew they were aware of that grim fact. Somehow, they seemed like children in their dependence upon him and him alone, the captain. He felt it so strongly that his heart went out to them, and there, on the tilted, flailing deck, all the fire went out of his eyes and all the natural sweetness welled back. He placed his hand on a cockney seaman's shoulder and smiled.

"You've all done all you could—every man," he said. "It's up to the engines now. Hear 'em plugging ahead! The stoke-room bulkhead'll hold and that leaves nearly two quarters of the hull to keep us afloat. Now go on above and look for a boat." Then he leaned over his second officer. "Don't worry, old fellow," he said. "I didn't get the ship to lose her, I feel it."

The words impressed Talmedge and he thought of them with keen regret an hour later, when word came up from the engine room that the water was knee deep down there and that the bulkhead was bending like tin. When he received the message, Tewson and most of the men were grouped about a stark length of weighted canvas at the lee rail, just abaft the funnel, while Nash, in his clear, solemn voice, recited the committal of the dead to the sea. The young officer waited until he ceased speaking and the body of Jensen, the sailor who had been crushed against the rail, was delivered to the deep. Then he spoke.

"Penwerthy has just whistled up the tube that his crowd's coming up. . . . Water reaching their waists. . . . Bulkhead'll go any minute. Wants to know what you say."

Nash raised his head wearily.

"Tell them to wait until I come down to them."

But the time for waiting in those terrible compartments below the water line had passed, and even as Nash spoke, the men were struggling from the bowels of the plunging tramp. They came in silence and grimly, as men from a fight which has gone against them, bowed with the realization of the futility of human endeavor against conditions far beyond the power of men to combat.

The engineer, Penwerthy, kept his eyes averted from his captain's face as he reported the condition of things below.

"The engines are still goin'," he said, "and they'll keep goin' until the fires are flooded. . . . It'll be soon, God knows."

So long as they went, so long, probably, would the Annandale keep her poor, frayed nose into the seas. And after that? The eyes of the men turned to the sea, seeking the assistance that might lurk behind those mountainous waves. With fascinated gaze they watched the heavy clouds as they rolled on from a shortened horizon and merged with the banks that encompassed the waters. There was no mercy in them, no faint suggestion of hope—nothing but sullen, implacable fury.

The sea, gray as the rocking firmament, bore at the vessel with sounding waves, incessant, heavy as the leaden clouds. Crested half way down with boiling white, with dirty, shrieking white, the combers struck like fangs, rending woodwork, crumpling iron. The Annandale's bow had gone down flush with the water, sordid, washing. The deck was littered with water-soaked debris, hanging by shreds and splinters.

William Nash stood apart, holding to the twisted bridge rail. He could hear the halting throb of the engines. If that bulkhead would only hold! The wind surely was diminishing. Perhaps it would be the final lull. If so, the seas would go down shortly. Why not? Ships had been as bad as this and lived. Why—— There came a quivering under his feet, a sort of rising of the deck below. Then a muffled roar, followed by a soft, velvet, swishing sound of rushing waters; a rasping and tearing of iron, dull, but frightfully suggestive of terrible force.

"The stokehold bulkhead's gone!"

A shudder passed through the vessel. There came a great hissing, an uprush of steam, caught by the wind and whistled away.

"Stand fast! Hold!" The warnings from a score of throats drifted to sea as the Annandale slewed with a jerk and then wore slowly around until she lumbered in the trough of merciless waters. Wallowing, plunging, smitten sore, bow, stern, amidships—no one knew which clanking roll would be her last.

The crew clung to the stays of the funnel, to the bridge rail, to the rigging, in strange, unnatural silence. Occasionally a man would kick off his shoes, or roll up his sleeves as though preparing for a physical combat. Several had climbed up the shrouds of the mainmast, hanging rigid, their eyes staring out over the waters.

Nash looked nowhere. His interest in things of life had all gone and his one desire was to have the whole thing over with and as soon as possible. But the men? Aye, there was a dull ache there. Poor duffers, what could be done for them? This thought filled and danced through his mind, it seemed for ages. Eh, what about them? Whether the ship lived or died, they'd get no credit. Damn the ship, too, to make all this trouble just as he had his first command. It was trouble, really greater than he should be called upon to bear.

Ages seemed to file across the dark waters as he stood there.

Why was it all so long? He had a dim recollection that in the vague past some one had touched him on the shoulder and said ringing words. He did not know what, or care. He could only feel now that in some way he was detached from his men, from all mankind, all the world. Why? He had avoided the faces of his crew, but now he must look at them. Haltingly he glanced around and caught a strange electric atmosphere. They were all about Tewson; Talmedge was reading something from the code book, and Maconachie, his face streaked with blood, was hoisting some signal flags to the triatic stay.

He started to walk across the reeling bridge and sank to his knees. He remained thus, a minute, swaying, and then struggled on to the group of men.

"What is it, Mr. Tewson, a steamer coming?"

"Two of 'em, as I told you, sir," shouted the chief officer.

"They saw us long before we saw them. One's been moving to windward, the other edgin' to leeward. . . . See her. . . there, comin' over that wave. The other's plain to see. . . . They're near enough now to break our seas for us. . . .

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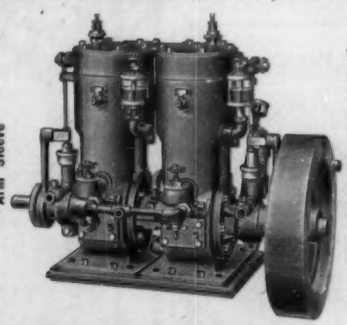
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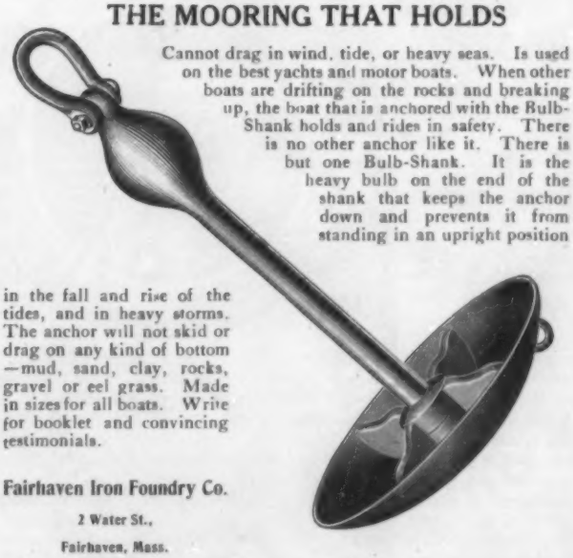

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What does that German hooker say, Talmedge?" he cried, turning to the second officer, as the young man let his glasses fall to the end of the strap by which they hung around his neck and turned the pages of his code in the work of translation.

"They'll lower in five minutes!"

"Good. Tell them thank you," and William Nash reeled away.

He did not even thrill at the news. Vaguely, he was pleased that arrival of the vessels took from his mind the sense of responsibility of his men, which had weighed him down all through the fight. His mind was absolutely negative. He could hear the shouts as the progress of the lifeboats was noted, but the sounds meant nothing to him. When the eleventh hour reprieve seemed assured and a deep silence fell upon the men, as they stood tense and eager, filled with emotions too deep for utterance, Tewson worked his way to Nash's side and seized his arm.

"You have done all that a captain could do," he said simply.

"Yes," there was a catch in Nash's voice. "Mr. Tewson, you've been very good—all of you. . . . You'd better have the men lower some lines over the bulwarks. It'll save time when the boats come under. It'll be lively work. . . The ship's going—going fast."

"Aye." Tewson plunged toward the funnel, shouting orders to the willing men.

Ten minutes passed—it seemed as though the afternoon had swept away before two of the succoring boats fought their way under the lee; and now another was rounding the stern from windward, on top of a wave.

"Hurry, you fellows up there!"

Nash stood rigid on the bridge, gazing down at those at the oars, watching as man after man slid into the plunging boats. He noted, as in a dream, the short, powerful strokes by which the boats were kept safely alongside the washing hulk. He tried to concentrate his thoughts, but his mind refused to act.

Penwerthy, Maconachie overside now. Tewson stood on the deck with Talmedge a second and looked up at the figure on the bridge.

"Go on, Talmedge!"

"You first, Mr. Tewson; I must ask the captain to come."

Tewson shrugged his shoulders and disappeared. Tewson was to command a ship himself soon.

With all the ardor of youth, the second officer ran a bit aft.

"Captain Nash, come on. Oh, God! There's no one aboard. This ship's no liner."

William Nash looked down and faced the officer squarely. In the set countenance Talmedge read vestiges of the struggle of pride and duty—pride and duty foolishly conceived, as the young man knew them to be, and yet all absorbing, almost noble in his captain. He felt that plainly and, feeling it, he thrilled with the glorious sophistry.

"Come," he cried again. The next instant his form cleaved the air in the descent to the one boat that remained. There was a silence. Then another hail.

"Oh Nash."

William Nash stood for an instant as though undecided. Then he leaned over the rail.

"Go on. . . . Good-bye. . . . Report me . . . on the bridge." He turned from them with a slight gesture. They caught a glimpse of his white face. Then a wave forced the lifeboat away and the Annandale floundered off, going lower and lower.

The gloom of late afternoon invested the waters. The dark was coming on and William Nash turned defiantly to face it. How lonely it was. A great shadow settled over him, settled over all the world. The waters rose, slate-black, sinister, deadly, and the eternal clouds careened and closed in and draped the Annandale in a shroud. Lower. Lower still. A deep, metallic sigh. A gurgling of waters. Gone the Annandale from the face of the deep.

Which was well. For with the Annandale disappeared terror from the waters—a bad fight ended. The ocean, filled with many triumphs, surged forgetful—and still hungry. . . And men turned to things ahead.

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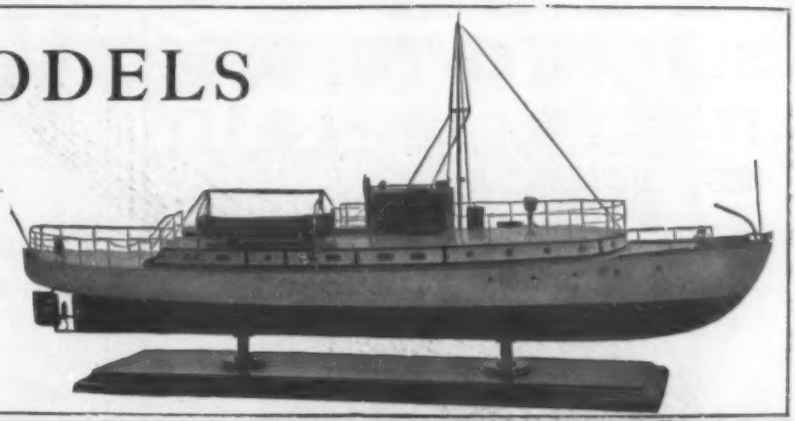

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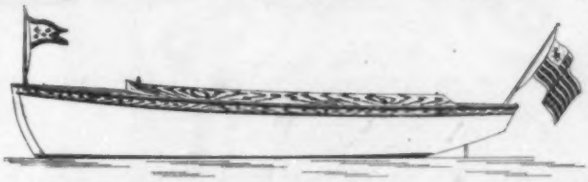

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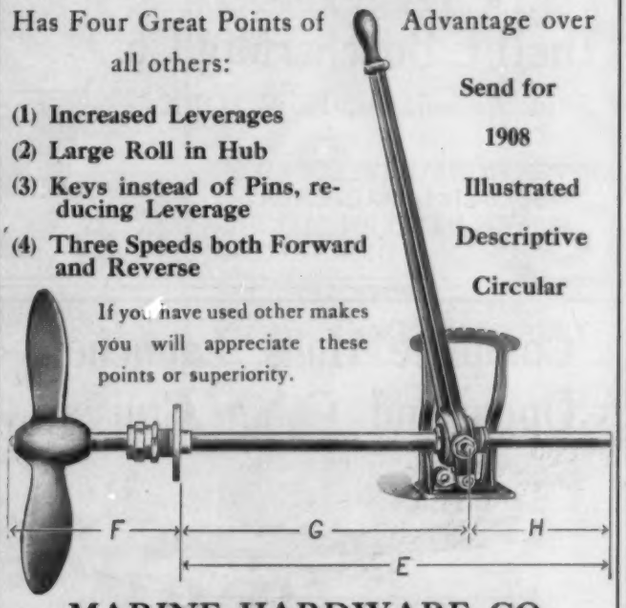

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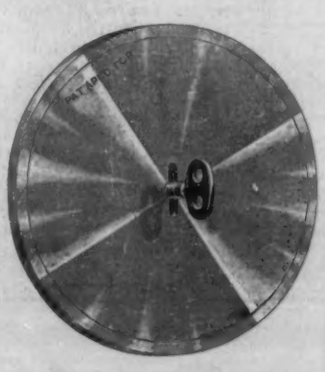

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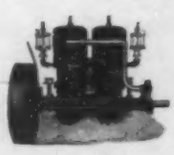

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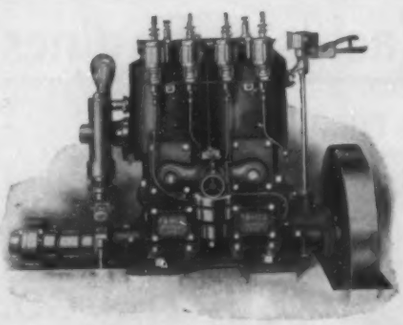

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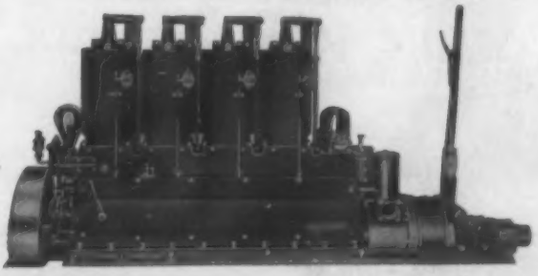

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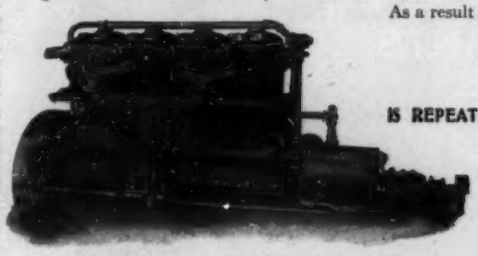

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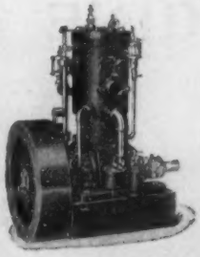

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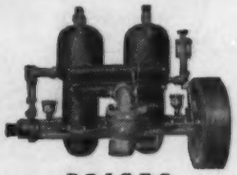

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WE GUARANTEE to increase the speed of your boat 1 to 3 miles per hour.

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By years of experimenting we have found that a propeller with blades of a differential pitch and a concave curve from the hub to the outside of blade will hold the water the whole length of blade which lessens the slip more than any other design of wheels, thereby increasing the speed of any launch.

We also make all kinds of bronze trimmings, stanchions, etc., and fog bells at lowest prices.

BRYANT & BERRY CO.

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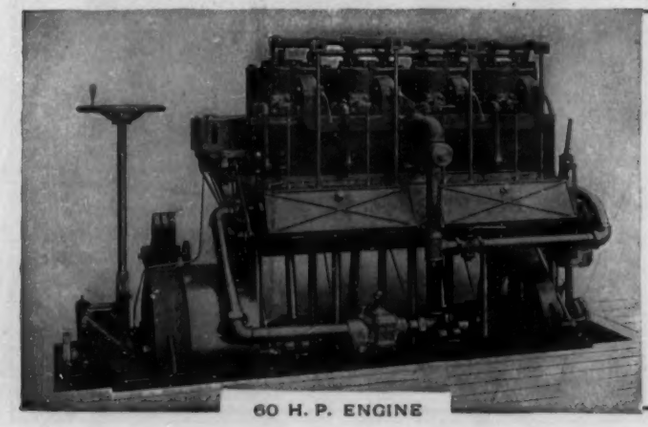


60 H. P. ENGINE

Gasoline Yachts & Engines

NOTED FOR RELIABILITY

Tregurtha Water Tube Boilers, Steam Launches & Engines

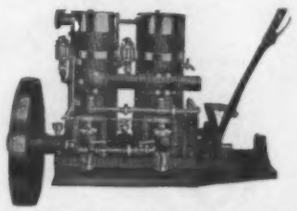
Send for Circulars and Second Hand List

MURRAY & TREGURTHA CO.

340 West First Street South Boston, Mass.

Winner of Chicago - Mackinac Endurance Race

THIS is the engine that won the long distance race from Chicago to Mackinac on July 20th, 1907, proving the endurance and reliability of our machine. We quote the following from a letter from the owner of "SWASTIKA," winner of the race:



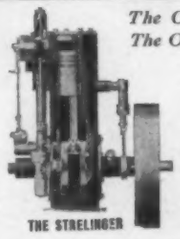
"We are pleased to inform you that we won the Mackinac long distance race on July 20th, with our 42 x 10 motor boat "SWASTIKA" with your three-cylinder 16 H. P.

FAY & BOWEN ENGINE

We made the 332 miles in 36½ hours under rather trying conditions, such as heavy seas, squalls, thick fogs, etc. Our boat was launched May 20th, and on the 21st without anyone in the crew that had had any experience with your engine, we started on our 200 mile trip to Chicago, which was made without any difficulties whatever."

We also build a successful kerosene engine **Write for catalogue of engines and boats**

FAY & BOWEN ENGINE COMPANY, - - 115 Lake Street, Geneva, New York



The Optimist and Pessimist, the difference is droll;
The Optimist sees the doughnut, the Pessimist the hole.

You can't be a Pessimist and own a

STRELINGER

(4 Cycle, 1 to 4 Cylinder)

IT ALWAYS GOES

BEST MARINE ENGINE MADE

We also carry in stock several of the best makes of 2-Cycle Marine Engines, and a full line of Stationary Engines, Pumping and Electric Lighting Outfits, Boat Accessories, Etc. WRITE FOR OUR 1908 CATALOG. Let us know your wants and we will quote prices.

Engines 1 1-2 to 50 H. P., $33 to $2,500

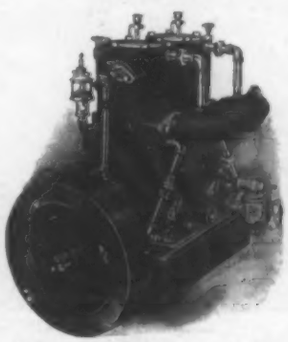
THE STRELINGER MARINE ENGINE CO.,
46 E. Congress Street, DEPT. T. Detroit, Mich., U. S. A.

ROYAL MOTORS

Easily Controlled

Easily Accessible

2½ - 5 - 7 Single Cylinder



No useless Weight

No Complicated Parts

5 - 10 - 15 Double Cylinder

EACH ENGINE IS THOROUGHLY TESTED BEFORE IT LEAVES THE FACTORY

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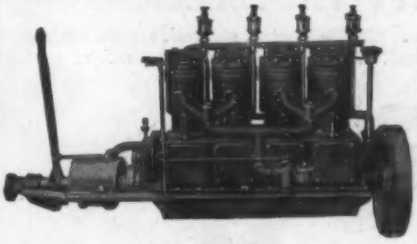
The Monarch Kerosene Engine



It leads them all in durability, cheapness of operation and general results.

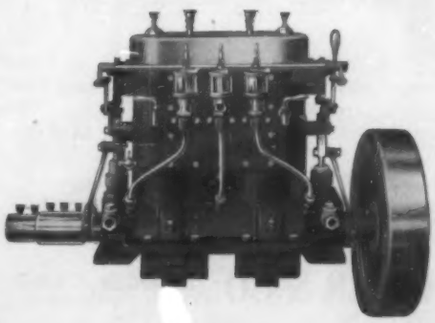
Your correspondence solicited.

Send for Catalogue

5 to 100 H.P.

Grand Rapids Gas Engine & Yacht Co.
100 Front Street, Grand Rapids, Mich.

STANLEY MOTORS



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TOQUET MOTORS

which can now be purchased direct from us.

HIGHEST CLASS OF WORKMANSHIP

Have stood the test of Long Service

Prompt Deliveries

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THE STANLEY CO., 79 Milk St., Boston, Mass.

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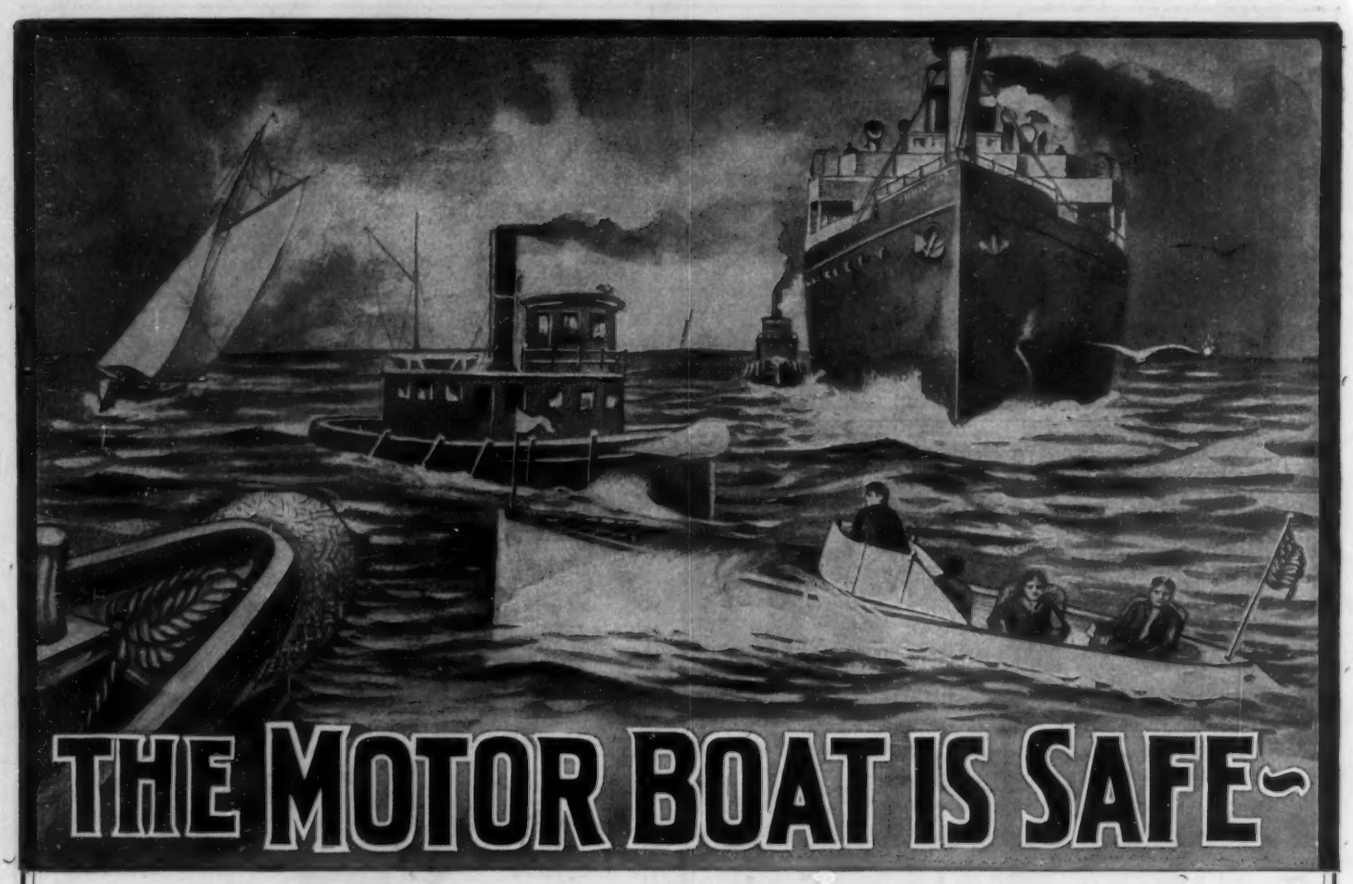

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WHEN EQUIPPED WITH A ROPER SAFETY PROPELLER

It is instantly responsive and absolutely controllable at all times and under all conditions. Can be started, stopped, started again, forward or backward without jerk, jolt or jar, can creep, glide, speed or go at any pace desired, in either direction, at the will of the man at the lever.

the ROPER Safety Propeller

Only one man and one lever necessary to operate it. The control is marvelous, the action accurate and reliable, so there need be no mistake and no running into danger.

No need to throttle the engine and risk its going dead. There is never a moment when the boatman is not master of the boat if it is equipped with the ROPER SAFETY PROPELLER.

"In response to your inquiry, I will say that I like your new propeller very much, after trying it about one month. I formerly used a steam engine on my launch on Lake Sunapee, N. H., but changed to gasoline a little more than a year ago. Now, the gasoline engine, with your propeller, gives me the flexibility and ease of control that the steam used to give, but without the disadvantages of steam. It is a great invention for launch owners and I can heartily recommend it."—H. C. CLAPP, M.D., 354 Commonwealth Avenue, Boston, Mass.

The Roper Safety Propeller makes the racing of the engine impossible, makes the boat run smoother, saves machinery and may save boat and boatman.

Every Roper Safety Propeller is positively guaranteed to perform as represented. Full information on request.

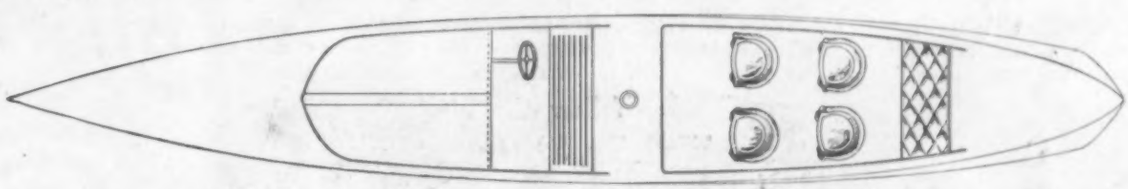
Address C. F. ROPER & CO., Hopedale, Mass.

35-Foot **Elco-Peerless** Speed 22 Miles

Equipped with 50-H.P., 6-Cylinder Peerless Auto Marine Engine

The Elco-Peerless is the latest development in the Runabout Express type. In the refinement of boat and engine it would be hard to conceive a more perfect combination. A careful regard for comfort and safety of model based on past experience has been incorporated in the design and construction.

Exhibited at the New York Show, where two were sold—for use on Lake George and the Maine coast.



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Equipped with our own power, the ideal boat for lakes and rivers.

Motor Yachts

Equipped with high-grade gasolene engines, 25 to 150 feet.

High-Speed Motor Boats

15 to 30 miles per hour guaranteed.

Order now for next season's delivery — The more time given the builder, the better boat he can turn out. We furnish designs or build from your plans, as you prefer

Catalogue upon request, 4c in Stamps. *Fifteen Years' Experience.*

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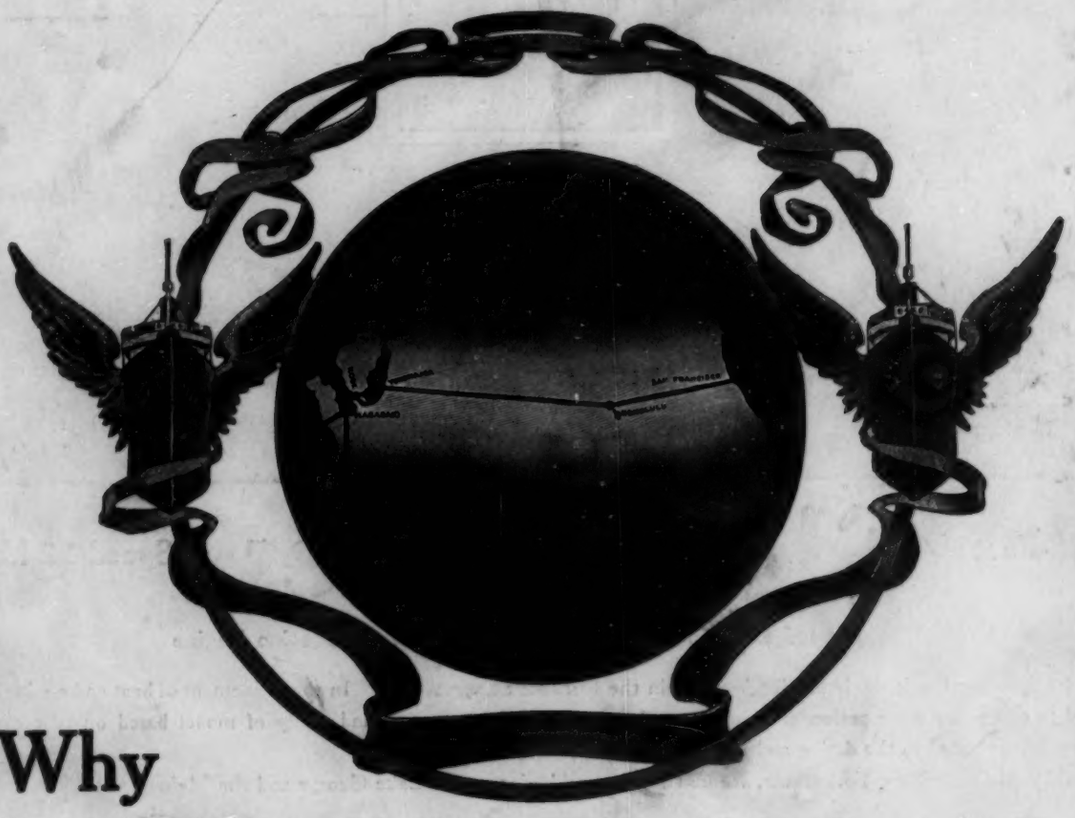
MEMBER OF THE NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS

See Our Exhibit at the Boston Motor Boat Show



Why Pacific Mail Steamers follow the "Sunshine Belt" to the Orient

[From the *New York Herald*, January 7, 1906]

Stretching completely across the Pacific is what may be termed the "Sunshine Belt." Here the sun shines regularly, the trade winds blow gently, there is very little rain and the seas are never high. It is within this belt that the Hawaiian Islands are located, with their equable climate and subtropical verdure. ¶ North of this the Pacific presents much the same aspect as the Atlantic, with its cold winds, fogs and blows, except that the icebergs of the North Atlantic are lacking.

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